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LEONARD FRANK's name will be recognized by DIGEST readers as that of the roentgenologist who has written for us both independently and in collaboration with Doctor William A. Colburn of San Francisco. His most recent publication with us was as co-author in May, 1939. Previous strictly roentgenologic articles by Mr. Frank described A SIMPLIFIED TECHNIQUE FOR FINDING ANGLES AND CONTROLLING DENSITY IN DENTAL ROENTGENOGRAPHY (October, 1937) and A LONG DISTANCE AND LOW PENETRATION TECHNIQUE FOR DENTAL X-RAY UNITS (March, 1938).

WILLIAM E. POTTER, D.D.S. (University of Buffalo, 1927) is a general practitioner whose practice emphasizes oral surgery. Doctor Potter was formerly on the consulting and teaching staff at the University of Buffalo and assistant oral surgeon at the Edward J. Meyer Memorial Hospital. A previous article appeared in this magazine in August, 1939 on THE CORRECTION OF ABNORMAL TOOTH ANATOMY: ITS EFFECT ON PATHOLOGIC CONDITIONS OF THE SOFT TISSUES.

WILLIAM LADD MOODY, D.M.D. (Tuft's Dental College, 1910) is a general practitioner with three years' teaching experience at Tuft's. Doctor Moody relates an unhappy personal experience as a warning to others in handling acrylic liquid. It is not within the province of his report to develop the theories of dermatitis venenata or allergy reactions but merely to sound the need for caution to the profession.

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Pain Control through Heat Control

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DIGEST

Temperature zones of tissue tolerance and heat production of pain are discussed and illustrated. Most operative pain is found to be caused by altering the temperature of dentine. During the "drilling" of teeth, pain is best prevented by the use of a stream of water at a temperature of 100° F. A detailed and illustrated description is given of the construction and action of a simple fluid stream apparatus by which heat is controlled in order to prevent pain. Operative speed and accuracy are increased.

THE SENSATION OF PAIN from dentine may result from pressure, chemical action, or thermal changes. Most operative pain is caused by unwittingly altering the temperature of living dentine. This occurs most frequently during the use of burs or stones, the application of chemicals, and in cementation. For each, a corrective appliance is suggested which is so designed as to be assembled or constructed by anyone from materials already in the open market. This article deals principally with thermal changes that result from the friction of burs or stones during cavity preparation.

Previous researches indicated temperature rises of only a few degrees when using dental burs in a moderate fashion. Unfortunately, these measurements were made during experiments on pulp trauma with little thought toward the symptomatic pain. Naturally, increase in pulp temperature during cavity preparation is important, but when considering heat as the causative agent of pain, we are more deeply concerned with the temperature of the surface of the particular dentinal tubules actually undergoing abrasion or cutting, and with the temperature of the working blades of the instrument. My investigation indicates that temperature rises during the moderate use of the bur are not limited to a range of from 5° F. to 10° F. but range from ten to several hundred times previous estimates, varying with individual operating techniques. This was found by measuring the total heat generated as applied to the specific heat factors and the weight of involved substances, such as enamel, dentine, steel, carborundum. Excessively high temperatures are the result of the friction produced by burs and stones. It can also be shown that living dentine exhibits an average painless tolerance range of from 85° F. to 130° F. If the surface of the dentine is caused rapidly to assume a temperature above or below this range, there is pain (Fig. 1).

The need for caution in operative procedures under anesthesia has long been recognized. Under anesthesia, friction and thermal shock may result in pulp trauma and permanent injury; whereas the warning of pain in the unanesthetized patient automatically prevents such injury. Clinical experience has thus indicated the relationship between heat and pain but until now, no practical solution was available.

The stabilization of temperature during the use of the dental engine for cavity preparation is most easily accomplished by a continuous fine stream of 100° F. water striking the cutting blades, or grinding surface of the bur or stone (Fig. 2). A water syringe will suffice, but for convenience, in the suggested apparatus the reservoir tank has been eliminated and the fluid stream electrically synchronized with the foot controller. A comfortable and radically different nozzle attachment for the contra-angle or handpiece has been achieved. A stream of from 8 cc. to 16 cc. per minute is necessary; merely a wet stone or bur will not suffice. Dry burs should rarely be used.

Friction can cause a moist revolving instrument to rise to 212° F. and still retain the appearance of wetness. This is 82° F. above the painless tolerance range and 113.4° F. above body temperature—an excessive difference. Besides, the merely moist instrument will clog.

Advantages

The technique of thermal control with the fluid stream offers the following advantages:

1. Sharp steel burs cut rapidly and can be applied steadily, not intermittently. Even a sensitive dentino-enamel junction may be passed so quickly as to be scarcely noticed. There is no limit to operative speed.
2. Burs never clog, rarely need cleaning.
3. The cavity seldom has matted, dried, or accumulated débris. The

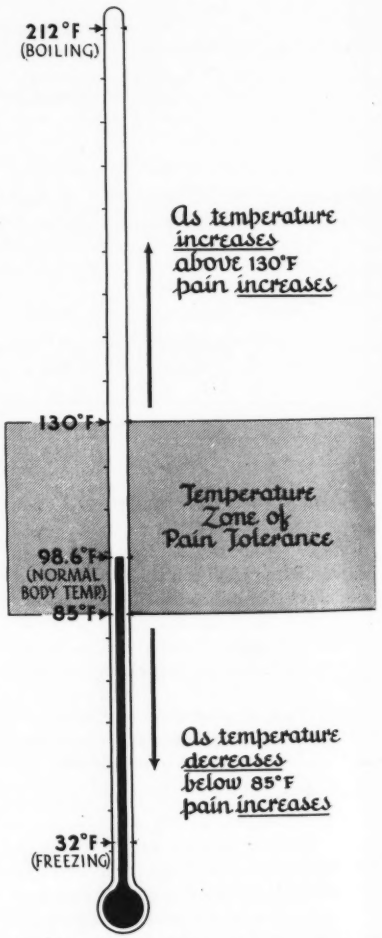


Fig. 1—Representation of normal body temperature with temperature ranges above and below as related to zones of tissue tolerance.

rubber dam may be applied to the completed preparation for inspection and filling, and usually the cavity will be clean.

4. Drilling causes no pain in more than half the patients; little pain in some; and those who still need anesthesia receive all the other benefits of the "fluid stream."

5. The operator has clearer vision and therefore greater accuracy without the use of a rubber dam. The color contrast between diseased and healthy dentine is greater in the wet state than in the dry. Each fissure in the enamel is revealed as a brown line to be extirpated. Areas of caries, cement, or amalgam are contrasted sharply against the creamy dentine, especially with transmitted light. Once accustomed to operating in a cavity filled with clear water and having the stream constantly wash away all loosened caries, cement, amalgam, enamel, and débris, each speck of foreign material becomes evident. There are no obscuring clouds of dentine, amalgam, or cement dust. There is no mud of cement and amalgam in the cavity to be whipped to a froth by the revolving bur.

6. In a case of extensive caries, this lubricating stream permits mass excavation. All caries can be rapidly removed from all cavities. Temporary cement may be placed into preparations, permitting comfortable mastication until the operator can make the finished restoration. With the fluid stream and a new bur, the temporary cement vanishes painlessly in a moment. Similarly, cement restorations, inserted for indigent patients, may be easily replaced when economically practical.

7. The elimination of frictional heat removes any possibility of unfortunate operative sequelae from thermal shock.

In the broader aspect of this technique, it follows that speed and painlessness would increase production and result in a greater financial return from operative dentistry. Sociologically, this method would permit more dentistry in the same number of treatment hours. The prevention of pain would tend to abolish the mortal dread of dentistry exhibited by so many people that 66 per cent refuse treatment even when it is free, as attested by the Report of the Industrial Sub-Committee of the President's Committee on Public Health, First District Dental Society of New York.

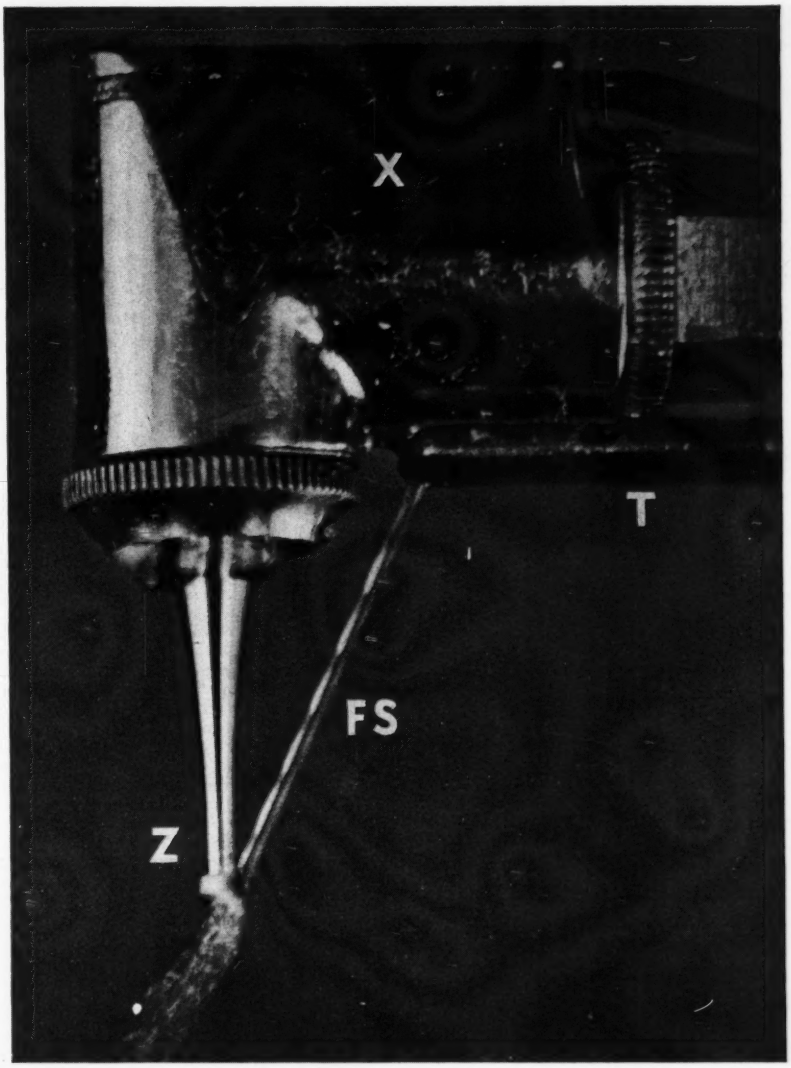


Fig. 2—T: Tape-tube in place on contra-angle; X: contra-angle; Z: number 3 round bur; FS: fluid stream.

Construction and Action of Apparatus

A brief description of a simple fluid stream apparatus, is herewith given. The actual cost of the material should be less than ten dollars.

1. A fine mesh water strainer is attached to any pipe supplying water at house pressure, such as that outlet which exists on the back of most dental units.

2. To the strainer is attached a commercial solenoid valve electrically synchronized with the engine of the dental unit.

3. A switch is inserted into the circuit for disconnection.

4. As the foot controller is touched the solenoid valve opens, activating the flow of water. This flow must then be diminished to 8 cc. to 16 cc. per minute by a pet-cock (Fig. 3).

5. Small gauge rubber tubing now leads water under reduced pressure to a spray bottle, through its stem to the bottom where it is warmed, and from where the water rises. The spray bottle must be inserted into the conventional heating well.

6. A further length of small gauge rubber tubing leads from the spray bottle along the engine arms to the handpiece.

7. The attachments for both the contra-angle and straight handpiece consist of a "tape-tube" (Fig. 4). This ribbon-like metal tube is made by hammering flat a length of 3/32 inch round hard nickel silver tubing. In

the attachment for the contra-angle, the end is blocked and a tiny hole drilled obliquely in the side wall to direct the stream on the point of the bur. In the attachment for the handpiece, the end is also blocked, but is then perforated by a small opening to direct the stream toward the blades of a straight bur. The "tape-tube" must be closely adapted to both instruments and firmly attached. The "tape-tube" clip need not be removed from the contra-angle until the "angle" is worn and requires replacement. The inlet end is fitted with a small nipple for the reception of the rubber tubing.

8. Adjustment of the fluid stream direction is made by loosening the set screw on the contra-angle and sliding or rotating the clip. Slight adjustment is also possible by bending the tubing with pliers.

9. Cleaning, drying, sterilizing, and lubricating contra-angles and handpieces can be accomplished by running in carbon-tetra-chloride followed by 250° F. mineral oil.

10. Evacuation of water while operating on posterior mandibular teeth is accomplished by a modified saliva ejector.

1235 *Grand Concourse.*

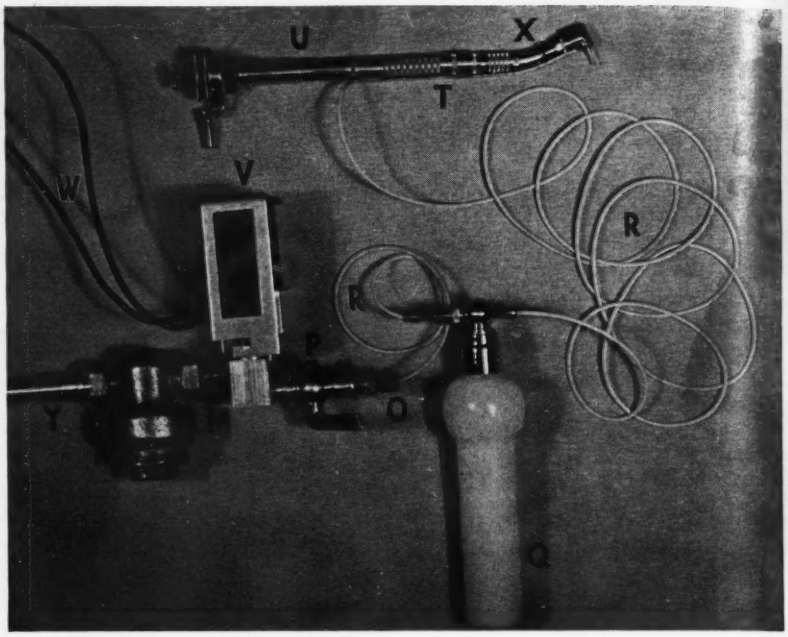


Fig. 3—Schematic photograph of electrically controlled fluid stream supply. Y: Water supply pipe (house pressure); fine mesh screen water strainer ¼ inch is seen between Y and M: reducer from ¼ inch to ⅛ inch standard pipe thread; V: solenoid valve, ⅛ inch, 115 V.; P: ⅛ inch pet-cock, male and female ends; O: ⅛ inch friction sleeve for ⅛ inch O. D. (outside diameter) tubing; R: $\frac{5}{32}$ inch O. D. rubber tubing; lumen: $\frac{1}{32}$ inch diameter; Q: spray bottle which should be fitted in heating well; W: electric leads from solenoid which parallel dental engine motor for synchronization; U: dental engine handpiece; X: contra-angle; T: tape-tube in place on contra-angle.

Coming:

ORAL INFECTIONS:

Anatomic Arrangements

Courses Pursued

Types of Swellings

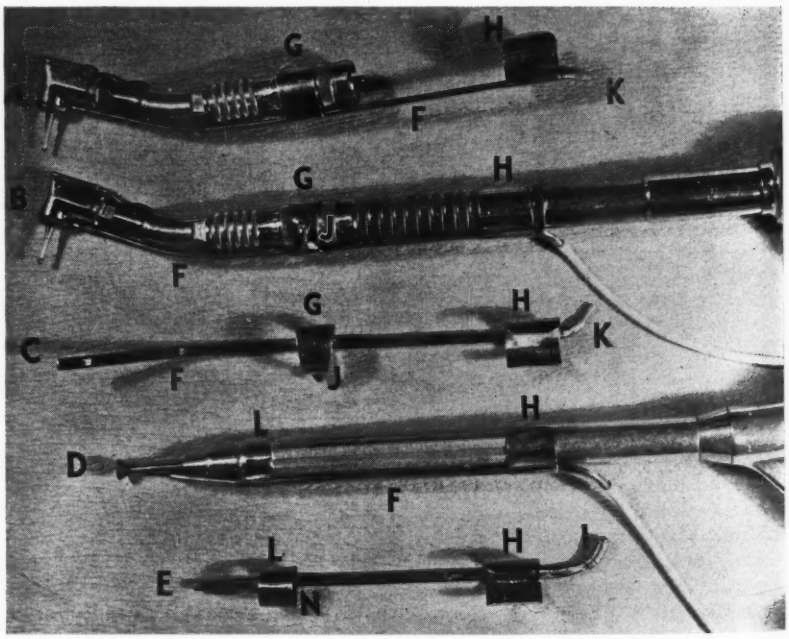


Fig. 4—Tape-tube attachments for contra-angle and handpiece. A: Contra-angle off handpiece, tape-tube attached; B: contra-angle on handpiece with tape-tube and connecting rubber tubing; C: tape-tube, top view, off contra-angle; D: tape-tube for handpiece in place with connecting rubber tubing; E: tape-tube for handpiece, top view, disconnected; F: ribbon like tape-tube, 1 mm. by 2.8 mm. nickel silver; G: clamp clip, 30 gauge hard nickel silver; H: spring clip, 30 gauge hard nickel silver; I: large nipple—not advised; J: set screw of clamp clip, number 80 N. F. (National Fine); K: small tubing, nipple $\frac{1}{16}$ inch O. D. for rubber tubing attachment; L: notched circlet for nose of handpiece; N: notch for screw head on nose of handpiece.

Fig. 1—Case 1: Osteophytes. At times objects appear in the maxillary sinuses which look like root fragments. They sometimes appear in one and sometimes in both sinuses. Occasionally teeth have been extracted from the region in which they appear, which complicates the interpretation. In this study the osteophytes appear bilaterally, and as all the teeth of the maxilla are present there can be no question as to the interpretation. These osteophytes are described by Cryer as "abnormal bony growths attached to the floor of the sinuses, generally known as osteophytes." (Cryer: Internal Anatomy of the Face, Philadelphia, Lea & Febiger, page 205.)

Ten Roentgenologic Studies

LEONARD FRANK, San Francisco

Because rules for roentgenologic interpretation cannot be hard-and-fast, several guides to interpretation are discussed:

1. Interpretation is based on the resistance of the object to the rays—dense objects offering the greatest resistance; porous objects, the least.

2. There is no true roentgenographic normal—only a normal for each person separately considered.

3. Color tone as a basis of interpretation is considered misleading. It is suggested that bone density be interpreted by color balance regardless of light and dark tones.

4. A complete series of roentgenograms is essential in interpreting bone changes in the dental arches.

5. Bone changes in the maxilla and mandible should indicate bone changes elsewhere in the skeleton.

6. Ten roentgenologic studies are illustrated and interpreted.

Interpretive Suggestions

Resistance of Object to Rays—When interpreting a series of dental roentgenograms, it is well to keep in mind that it is the resistance to the rays by the object to be roentgen-rayed that controls the densities in the roentgenogram; that metal offers the greatest resistance, tooth structure next, cancellous bone next, and soft tissues, the least. Because of this resistance the rays reach the film in varying intensities, registering the different tones from black to white. An abscess, for instance, because of the bone destruction offers little resistance to the rays; therefore, a larger quantity of the rays reaches the film. For this reason, that particular area in which the abscess is located appears blacker than the rest of the film. From this, it is deducted that interpretation is based on the resistance of the object to the rays—dense objects offering the greatest resistance, and porous objects, the least.

The Normal—It has been said, "Know the normal in order to interpret the pathologic." It is doubtful whether there is ever a true normal. There is an average normal, not a positive normal by which to judge all cases.

It is better to think in terms of the normal for the particular patient whose roentgenograms are being interpreted. Whatever satisfies the anatomic requirements for a particular patient is normal for that person. No two faces are alike but each face satisfies the anatomic requirements of the particular human being; therefore, each of our faces is normal for each of us. Thus it is regarding the dental arches. Some are large and some are small. Some have large teeth and some have small teeth, but the anatomic structure is either normal or abnormal for that particular person.

Color Tone and Color Balance—Most of us have heard or read that if the color tone of a set of roentgenograms is light, it may be assumed that the bone structure is dense and hard, and if the color tone is dark that the bone is thin, weak, and lacks calcium. That is rather a hard-and-fast rule and like all rules subject to many exceptions.

Figs. 2 and 3—Case 2:—Paget's disease (osteitis deformans). This condition occurs generally in the maxilla. It appears occasionally in the mandible but seldom in the maxilla and the mandible. The distinguishing points in the roentgenograms are the glassy, sandy appearance of the bony structure and the striations of the bone in the molar regions. Note moth-eaten appearance of the bony structure in Fig. 3, the roentgenogram of the skull.

There are many technicalities that cause color tone to be misleading and untrue. Current fluctuation to the x-ray machine; age and speed of the films used; age and temperature of the developer, and the age and penetration drop of the tube—these are a few of the technical possibilities.

Age of the patient is an important point and must be taken into consideration. In youth the body is more abundantly supplied with fluids than in age. Fluid is a resister of the rays, and for that reason, as a general rule, a great deal lighter tone roentgenograms are seen of younger people than of the elderly. Roentgenograms of people with fat faces will usually be lighter than those of people with thin faces. Thus it can readily be seen that there are a great number of ex-

Fig. 3

Fig. 4

ceptions to the hard-and-fast rule of light and dark tone roentgenograms. A better rule would be to interpret bone density by color balance regardless of light and dark tones.

Without going into a long anatomic discussion, for practical purposes, let us separate the body of the mandible and the maxilla into two parts: the cancellous bony structure and the marrow spaces. The cancellous bony structure shows in the roentgenogram as fine interlacing white lines and the marrow spaces show as the darker portion. When examining the roentgenograms, if the whites and the blacks show a relatively even balance, it may be assumed that the patient has a fairly normal bony structure. If the white is more abundant than the black the bony structure may be assumed to be dense and hard. If the black is more abundant with a distinct lack of white, it may be assumed that the bony structure is weak and lacks calcium. There are, however, exceptions to this rule likewise; but it seems to be the more nearly accurate method.

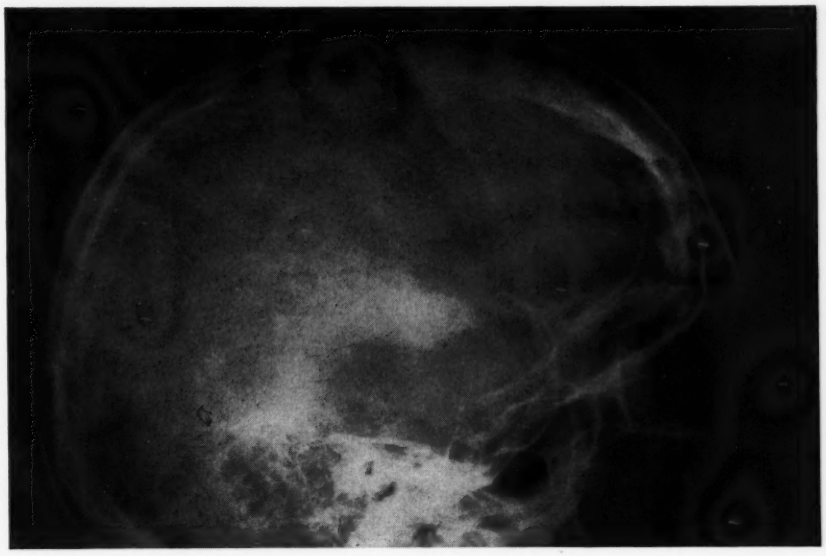


Fig. 5

Figs. 4 and 5—Case 3: Calcium deficiency. The blacks here far out-balance the whites. Roentgenogram of the skull (Fig. 5) shows the same deficiency in the bony structure.

Bone Changes—When interpreting bone changes in the dental arches, it is absolutely necessary to have a complete series of roentgenograms of the maxilla and the mandible. To attempt an interpretation of bone changes

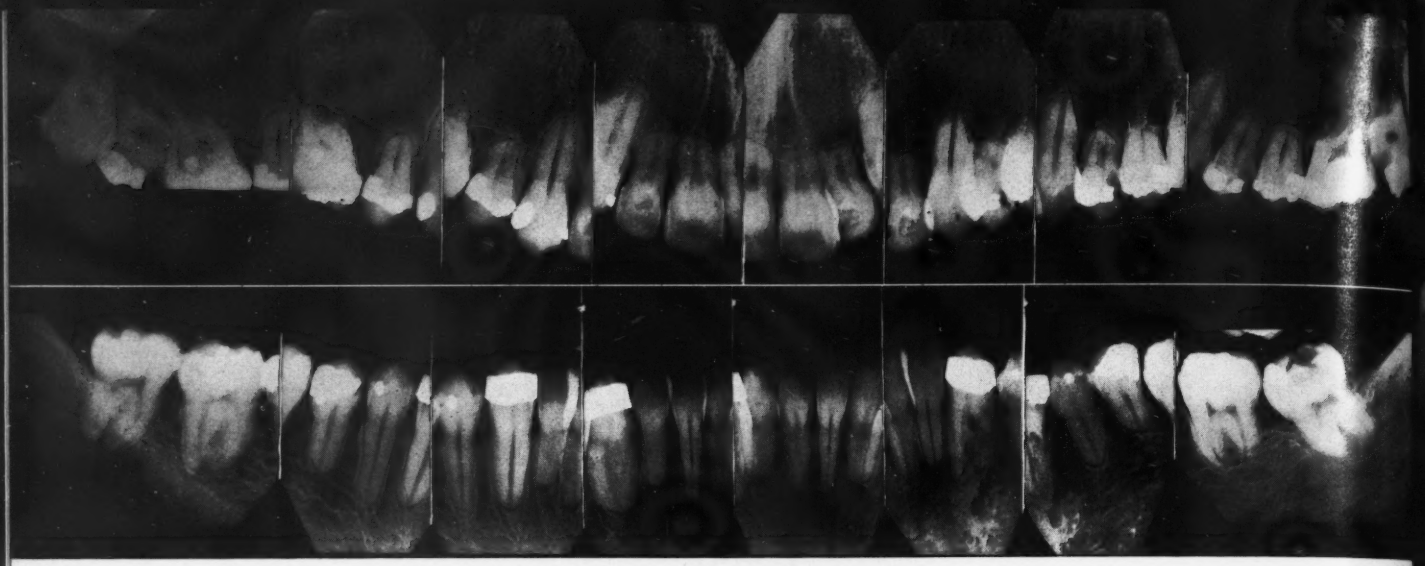
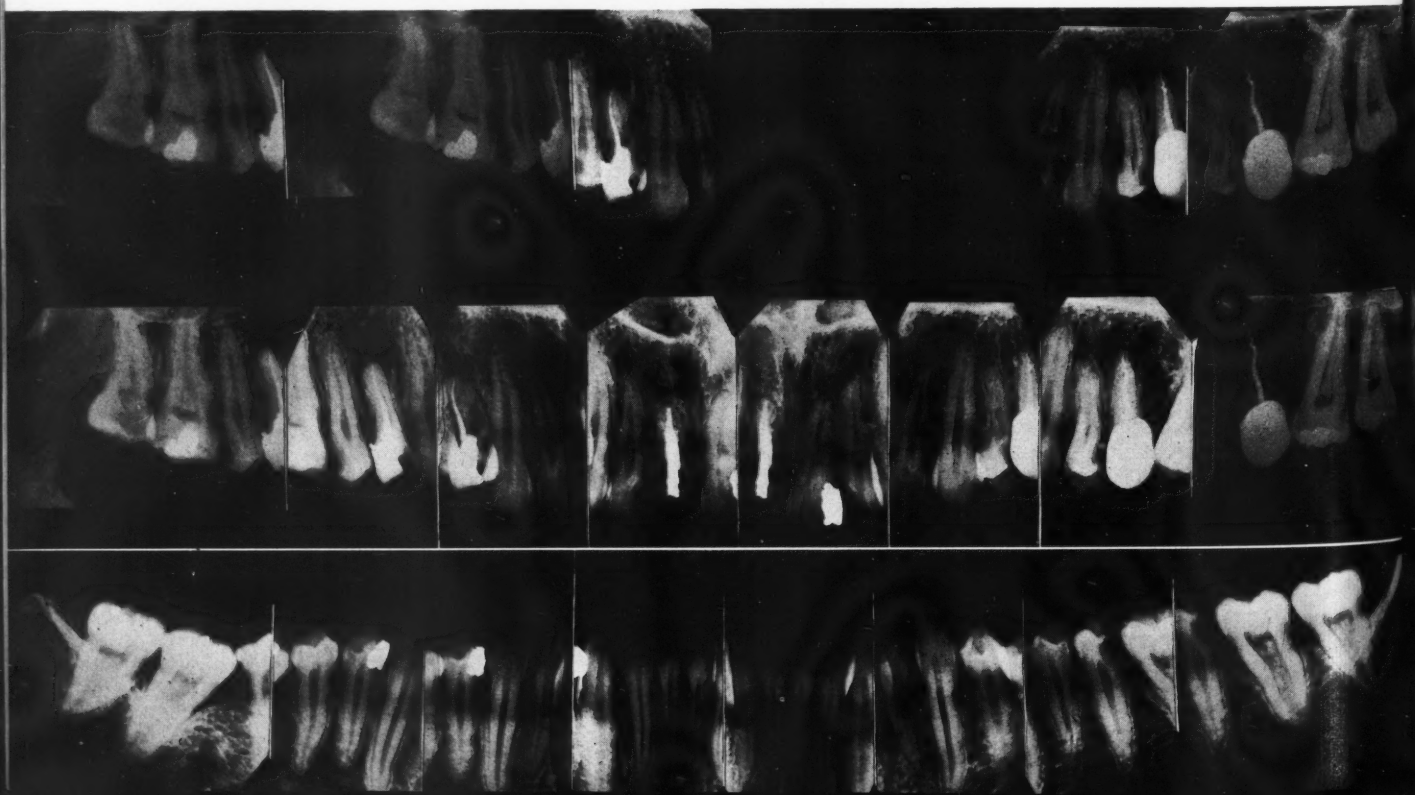


Fig. 6

Fig. 7

Fig. 9

Fig. 8



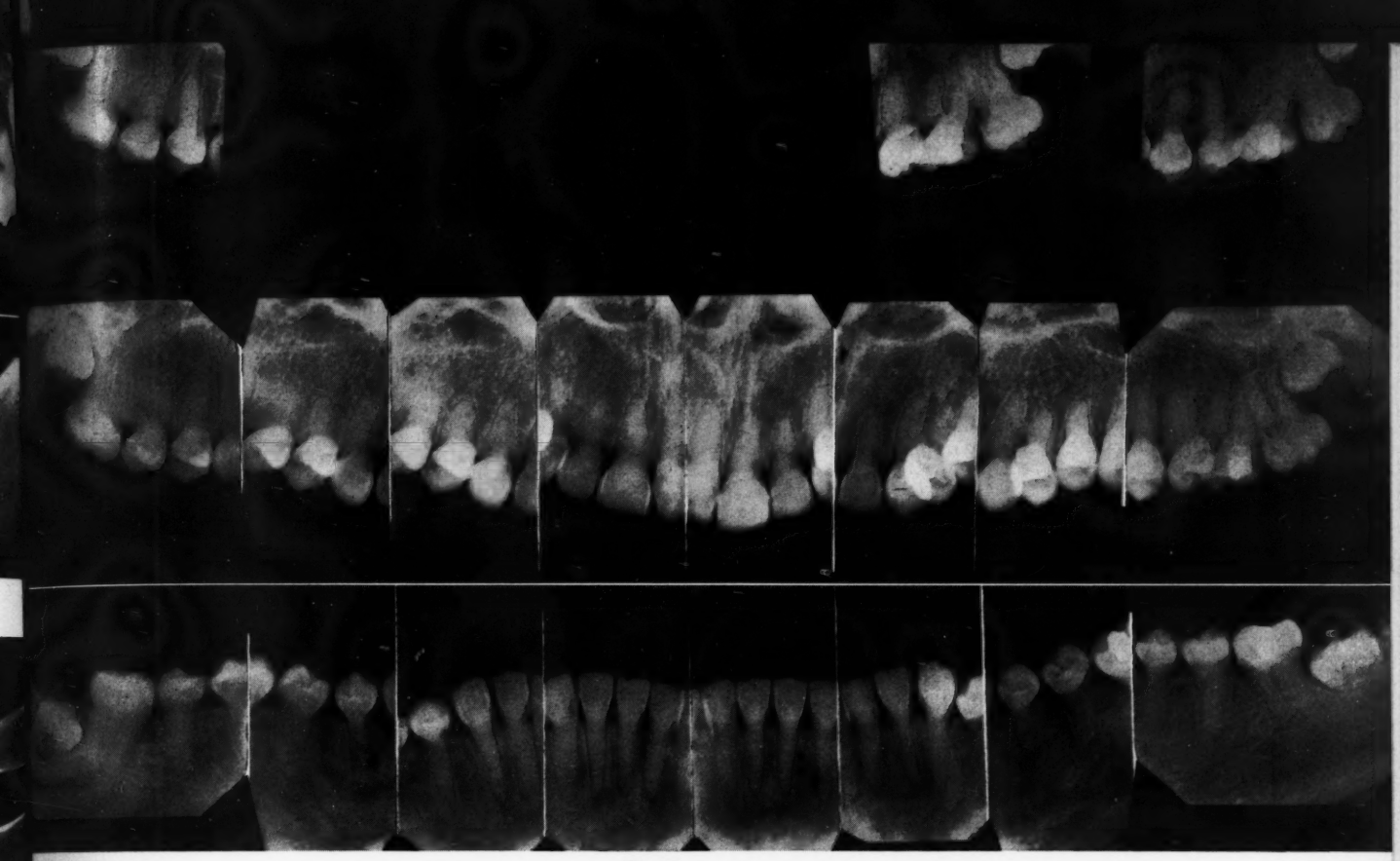


Fig. 10

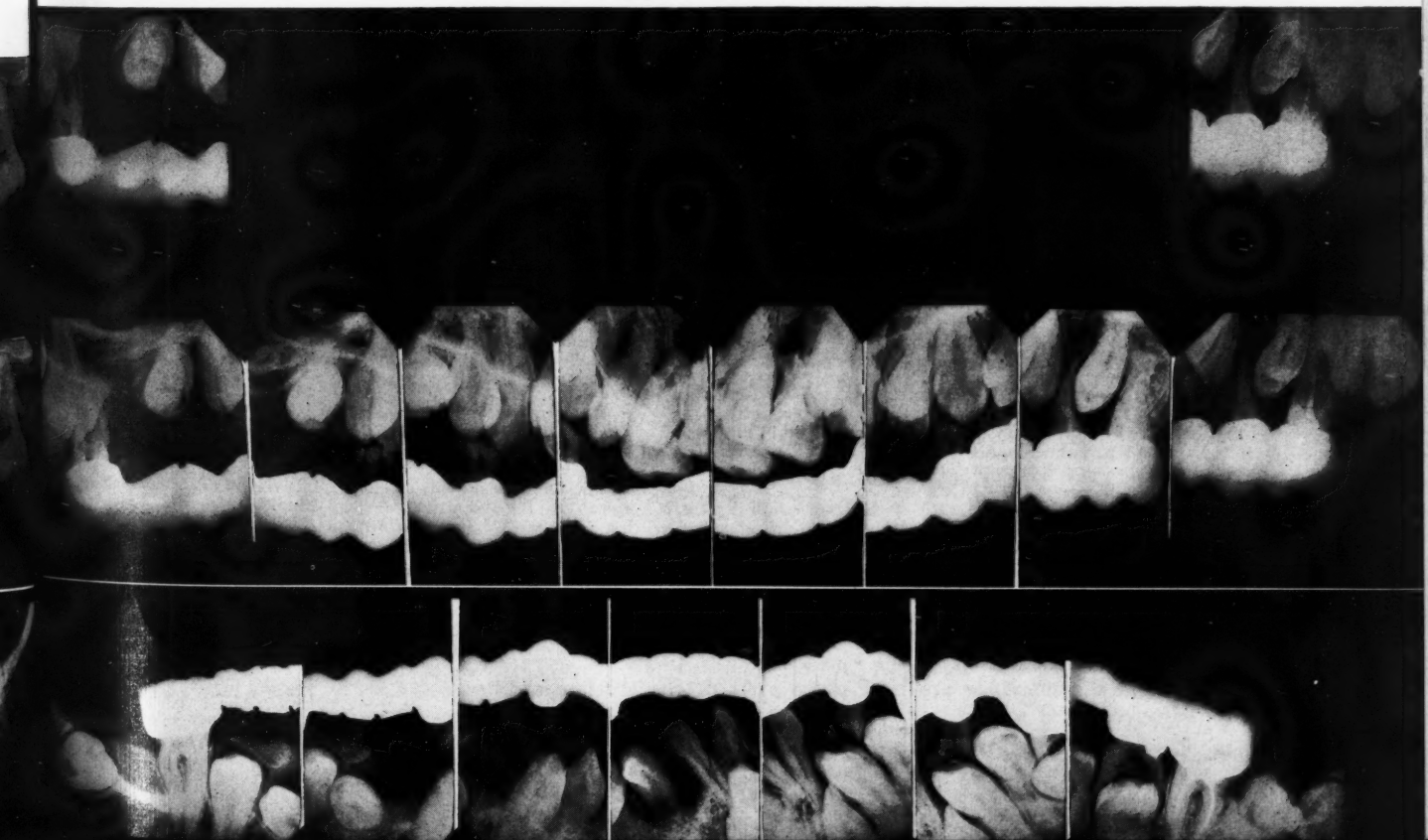
Figs. 6 and 7—Case 4: Root resorption. Although orthodontia had been done in this case, it is doubtful whether that was the single cause of the market root resorption. The bony structures of the maxilla and the mandible show a calcium deficiency which repeats itself in the skull (Fig. 7) and also in the wrist, arm, leg, and spine, of which roentgenograms were also taken.

Figs. 8 and 9—Case 5: Retarded development. A man, aged 29. Testes had not descended. Skin of the face was soft and smooth and covered with adolescent fuzz. Voice was high, almost soprano. The pulps and canals of the teeth are large and wide as seen in the juvenile. The epiphysis of the wrist (Fig. 9) has not yet closed nor has that of one of the fingers.

Fig. 10—Case 6: Enamel agenesia. Macroscopically the teeth appear to be a gray lavender in color. The crowns of the teeth are large and bulgy. Roentgenographically the teeth show large bulgy crowns with spindly roots. Usually there is no pulp chamber and the canals appear rudimentary if they appear at all. This condition is evidently hereditary as it has been seen from generation to generation in the same family—sometimes skipping one generation and appearing in the next one. In families of four or five children only one or two may have it and the other children will have normal teeth.

Fig. 11—Case 7: Retarded dentition in a man, aged 25. The father had a similar condition. Roentgenograms of the skulls of the father and son showed a lack of union of the bony structure.

Fig. 11



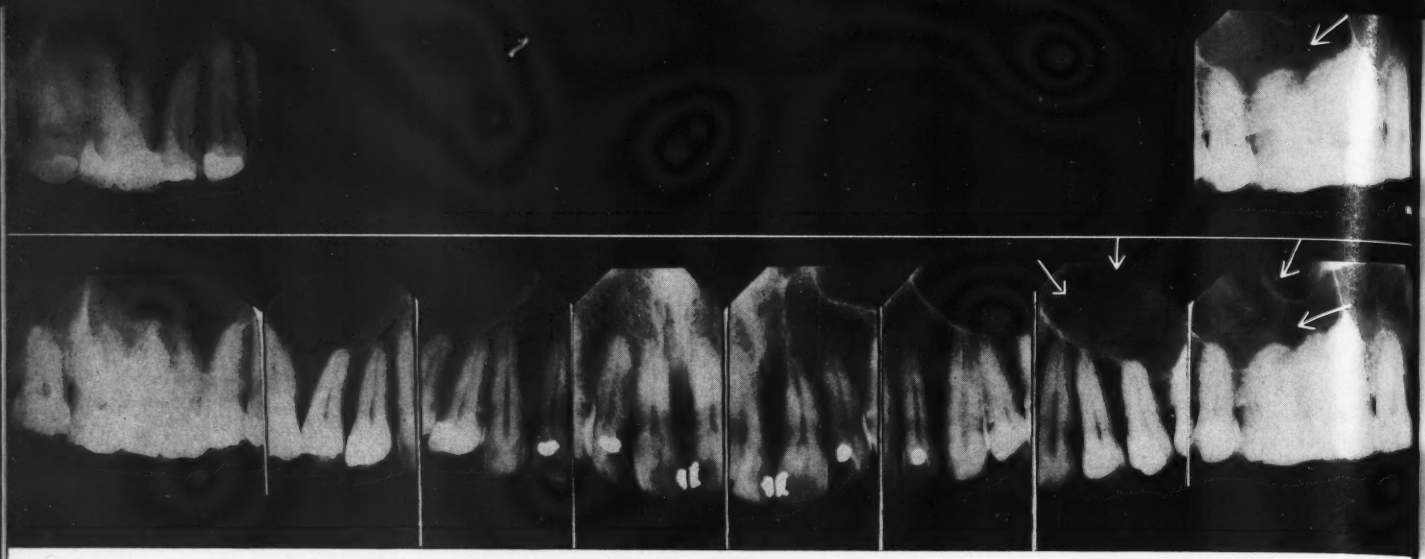


Fig. 12

Fig. 13

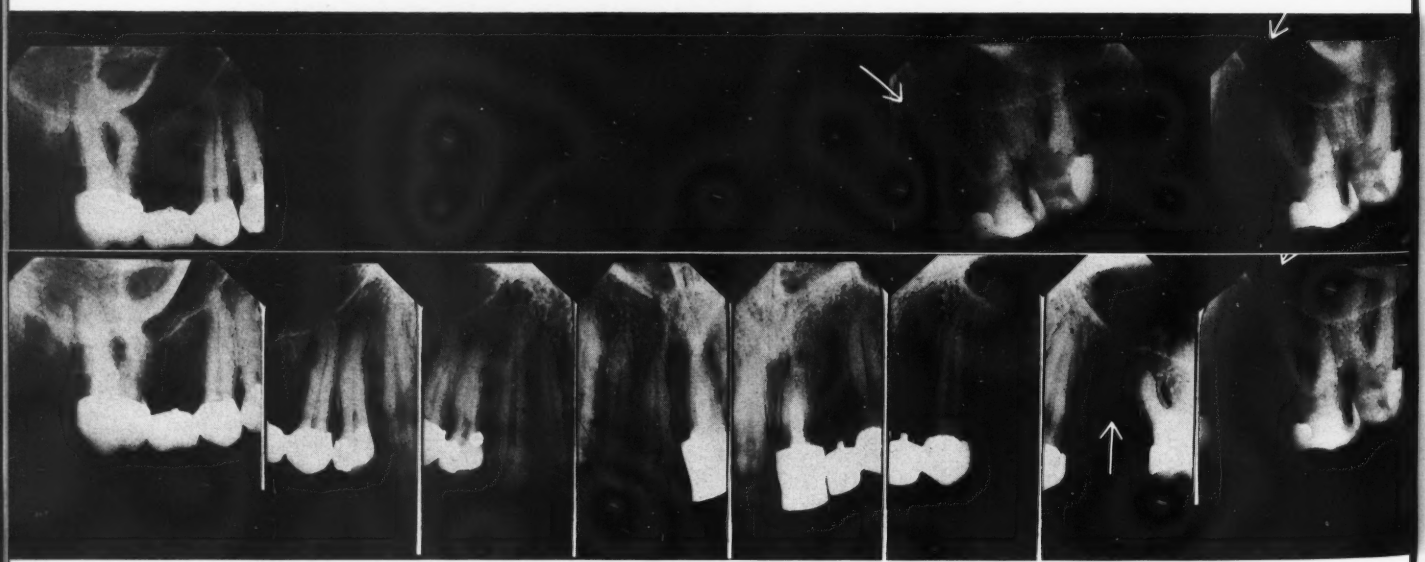


Fig. 14

Fig. 12—Case 8: Mucocele cyst. These cysts occur within the sinus and have no significance dentally. They show as a white mass in the sinus. They sometimes empty of their own accord and at times recur.

Fig. 13—Case 9: Cementoma (pseudo-cyst). Macroscopically the teeth are clear and white. The surrounding tissues are pink and healthy. The teeth respond to all vitality tests, and if extracted. show a pink healthy pulp. This condition occurs usually in the mandible in the incisal region. It is sometimes seen in the maxilla. It generally appears in women. It is usually bilateral but does occur unilaterally. The roentgenogram shows round rarefied areas at the apexes of the incisors extending onto the tooth covering about one half of the apical third of the tooth.

Fig. 14—Case 10: Sinus perforation. This is a typical appearance. The break is evidently of long duration as the wound is well covered with tissue.

from one or two roentgenograms is merely guesswork.

The fact that bone changes of the maxilla and the mandible are not necessarily confined to the maxilla and the mandible should not be overlooked. There is no reason why these bone changes should not occur in other parts of the skeleton of the body, and, as a matter of fact, they do.

Interpretive examples of interesting conditions are shown in the accompanying series of roentgenograms.

450 *Sutter Street.*

The Editor's Page

IT IS NO NEW fact to dentists that dental caries is the most widespread human malady. It seems, however, to have come as a distinct shock to the public to learn that the chief cause of rejection of Army selectees is dental defects. The enterprising *New York Daily News*, under the inquiring reporter method, picked six passers-by at random and asked them what they thought the chief cause of dental defects among the American people might be. The answers are surprising—at least, they should be surprising to those dentists who feel that the public is ill-informed, resistant or apathetic to information, and is in need of educational campaigns concerning the objectives of dentistry. The six persons interrogated appear to be fairly typical of any cross section of the American population. They all gave several reasons, so that there were sixteen reasons advanced for the dental defects of the American people. Broken down, their responses numbered five opinions that diet had something to do with dental disease; four, that fear of pain kept people away from the dental office; three, indicating that expense factors were responsible. The other answers were scattering. Under the nutritional heading, the following factors appear to be recognized: that malnutrition causes dental caries; in other words, that the absence of dietary essentials causes dental disease; that refined foods and sweets are contributory; or, in other words, that the presence of the wrong kind of foods is responsible. Also, that the lack of masticatory stimulation produces dental disturbances.

With the increasing emphasis on the importance of nutrition in preparing the country for national defense, it would appear that the American public is openly receptive to proper nutritional information. For that reason, we are presenting in this issue a feature on up-to-date concepts of nutritional fundamentals. We do not believe that dentists should prescribe so-called diets. Our function is to tell patients what the known nutritional requirements for the average person should be; to tell them something of what follows in the wake of malnutrition and avitaminosis; to recognize early deficiency signs and advise consultation with physicians. Most people that we see can safely be told in general terms what they should eat to maintain a healthy nutritional level. Some patients, however, may be suffering from some systemic disease requiring stringent dietary regulations and restrictions. It is not our task to prescribe for such patients. That is entirely within the province of physicians.

It is a mistaken belief that the American public is unaware of the facts of dentistry and that that is why they do not consult us. Every study made among groups of typical consumers suggests that they know a great deal about dentistry and its values and objectives. Our own study[1] made among 1200 patients in 1937 certainly justified this conclusion: It is not ignorance of the services of the dentist nor lack of appreciation of the benefits of dentistry that keeps people away. Fear is the deterrent and fear is a double-headed monster in the case of the dental experience: fear of pain and fear of price.

To overcome the fear of pain, dentists have many methods at their disposal: sedation, narcosis, local anesthesia, adroit operating techniques. Modern dentistry certainly has the instruments and the drugs to control most dental pain. The dentist, however, cannot expect any help from the outside in overcoming the fear of price. That task he must undertake himself. Here, he can depend on no drugs or instruments. The only method at his command is the simple telling of what is involved in the production costs of dental services. In the relationship between the patient and the dentist, the dentist must begin early to expand his efforts toward the conquest of the fear of price—not by cut rates which lead to sub-standard service but by forthright conditioning of patients to want good dentistry and to understand that its cost is essential.

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[1] What Twelve Hundred Patients Know About Dentistry. DENTAL DIGEST, 43:15 (January) 1937 and continued through February, March, April, May, June, and July, 1941.

Traumatic Ulcer of the Lip

WILLIAM E. POTTER, D.D.S., Buffalo, New York

DIGEST

The occurrence of an ulcer on the lower lip following a mandibular anesthetic injection is regarded as traumatic in origin — the result of gnawing the lip while the symptoms of anesthesia are still present.

Prevention is found in warning the patient. Treatment by washing with hydrogen dioxide solution and water and painting with phenol camphoratum has been found efficacious.

TRAUMATIC ULCERS occasionally appear on the inner border of the lip following a mandibular injection of procaine hydrochloride. Mead[1] refers to this lesion as a neurotrophic ulcer: "The ulcers appear the day following a mandibular injection and vary in size from that of a dime to that of a quarter. They are not painful and have the appearance of a circumscribed piece of pearly white tissue superimposed on the epithelial tissue. They are probably due to irritation of the nerve in a susceptible person or to a solution which is too hot." Some dentists refer to this lesion as a "novocaine burn."

I have a great deal of admiration for Mead's textbooks, but I do not agree with his explanation for the etiology of this lesion. There are many

Appearance of a traumatic ulcer of the lip, in a boy, aged ten years. The lesion appeared the day after a mandibular injection. This picture was taken the same day that I examined him, one week following a mandibular injection for the removal of two deciduous teeth. The lesion disappeared about three days later and the patient was referred back to his dentist.

reasons for believing that irritation to the nerve has nothing to do with the occurrence of the ulcer. If the ulcer is due to injury to the nerve, why is it that one never sees this lesion in any other location or finds that it is caused by infra-orbital or tuberosity injections? Whether warm or cold solutions are used seems to have no effect on the incidence of these ulcers. If too hot a solution were used in the injection, a necrotic process might be expected to start at the site of injection.

[1]Mead, Sterling: Diseases of the Mouth, Third Edition, St. Louis, The C. V. Mosby Company, 1928, p. 431.

Etiologic Investigation

The accompanying tables illustrate the classification of 1024 injections of procaine hydrochloride according to the presence or absence of traumatic ulcer following the injection. These figures were obtained from the records of injections made of patients in my own practice, whose condition was observed on the following day. There are many variables in a clinical study of this type more difficult to control than a laboratory experiment. An interesting fact shown by these figures is that a mandibular injection is the only one in which traumatic ulcers occur: one out of 180 cases. I did not classify infiltration cases or mental foramen injections, although I have an idea that these ulcers could appear following mental injections. In Table 2 it is seen that the only patients who were warned not to gnaw the lip until the symptoms of anesthesia had left were those who had received mandibular injections. This gave me further opportunity to see if these ulcers ever occurred following an infra-orbital or a tuberosity injection.

All the cases of traumatic or neurotrophic ulcer that I have observed have been caused by the patient gnawing or nibbling on the lip while the symptoms of anesthesia were still present. I have seen only about eight or ten of these cases in the last ten years because they occur infrequently. Patients do not realize that they have caused the ulcer themselves and unless the dentist asks them whether or not they were gnawing or biting on the lip while the anesthetic was wearing off, they will not even recall the occurrence.

Terminology

Whether this clinical entity is called an abrasion, a neurotrophic ulcer or a traumatic ulcer is of no importance, except that a name which suggests the etiology is the best one to use.

Prevention and Treatment

Traumatic ulcers of the lip following a mandibular injection can be prevented by warning the patient not to bite or gnaw the lip while the symptoms of anesthesia are still present. Often the patient is alarmed when he sees this lesion on his lip the day following an extraction. When

TABLE 1—Control Group

Injection	Age	Number of Cases	Traumatic Ulcer
Mandibular	Adult	180	1
	Under 16 yrs.	38	1
Infra-orbital	Adult	134	0
	Under 13 yrs.	8	0
Tuberosity	Adult	144	0
	Under 16 yrs.	25	0

the explanation for its cause is given to him, he is greatly relieved.

Treatment for these ulcers consists of washing them with a solution of hydrogen dioxide and water, equal parts. The area is painted with phenol camphoratum (N. F.) once a day. If swelling is severe, a saturated solution of hot magnesium sulphate may be used as a wet dressing. The symptoms usually disappear in about one week.

9 *East Ferry Street.*

TABLE 2—Patient Warned Not to Chew Lip After Mandibular Injection

Injection	Age	Number of Cases	Traumatic Ulcer
Mandibular	Adult	177	0
	Under 16 yrs.	35	0
Infra-orbital	Adult	133	0
	Under 16 yrs.	8	0
Tuberosity	Adult	129	0
	Under 16 yrs.	15	0

Severe Reaction from Acrylic Liquid

WILLIAM LADD MOODY, D.M.D., Newport, Rhode Island

DIGEST

A report is made of a severe dermatitis of the eyelids apparently as a result of accidental application of an acrylic liquid while processing.

THE ACCOMPANYING PHOTOGRAPHS show the effect of accidental application of an acrylic liquid to the eyes during the processing of acrylic dentures in my laboratory. While mixing the powder and liquid, my eyes became irritated and I inadvertently rubbed them with the back of my hand. I use rubber gloves while mixing and packing the acrylic material. When I rubbed my eyes, evidently I transferred some of the liquid on the gloves to the lids, because two days later, the lids swelled and burned until I was unable to open them at all. I remained at home under treatment for more than two weeks before I was able to resume practice.

Fig. 1—Appearance before reaction.

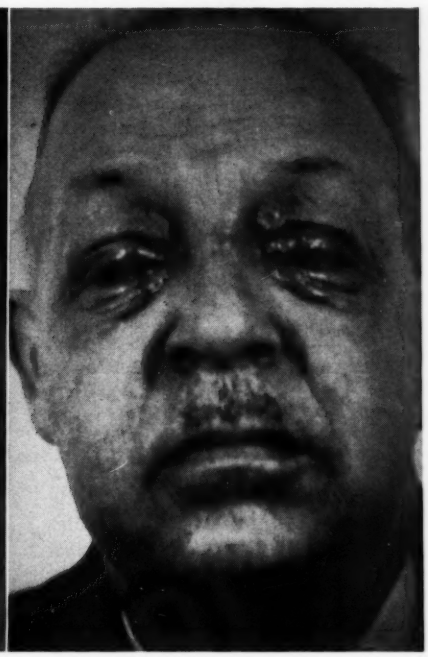


Fig. 2—Appearance after reaction of ten days' duration.

My technician had been affected on the hands on two occasions in the last year, with a dermatitis venenata, which was manifested by extreme itching, swelling, and raw fissures on the palms of the hands and on the skin between the fingers. That is why I had been working with rubber gloves.

I do not believe that the acrylic liquid acts the same with all users, according to inquiries that I have made, and according to the reactions in my own office where we use from five to eight mixes of acrylic resin a week. At the moment my technician is not suffering from the use of the material, but she uses two pairs of surgeon's gloves for the double thickness of rubber. On the other hand, my associate in practice handles the acrylic liquid with bare hands without ill effects.

Manufacturer's Report

"We have recently completed tests over a two-year period at the University of Maryland. These tests were made of the liquid methyl methacrylate as well as of the powder. The powder was found to be inert and to have no effect on animal tissue. The liquid was found to have a toxicity somewhere between alcohol and chloroform. In the eye the liquid acts as a temporary irritant with complete recovery."

Comment

I wish to emphasize that I am speaking of the effect of the acrylic liquid before processing, not of the material in the finished state of a denture or other acrylic restoration.

My experience with the material justifies extreme caution in handling, so as not to transfer the liquids of the acrylic resins to the skin or eyes.

The Wax Pattern and Its Investment

P. A. THOMPSON, D.D.S.,
Pascagoula, Mississippi

DIGEST

A technique is suggested whereby distortion resulting from removal of the pattern from the tooth directly or from the die indirectly is prevented. A fine U-shaped wire is inserted in the wax pattern in such a manner as to enable the pattern to be lifted in entirety with uniform traction on the various bodies of wax.

A GOLD INLAY CANNOT be better than the wax pattern from which it is made; therefore, without a true wax pattern the most careful technique ever devised would be unsatisfactory. The main problem is the removal of the pattern from the tooth directly or from the die indirectly without distortion. Figs. 1 and 2 show the most common method of removal with explorer or sprue, both of which are likely to obtain some distortion of the pattern. This distortion can easily be prevented by the use of a fine U-shaped wire (Fig. 3) inserted in the wax pattern so as to lift the pattern in entirety with uniform traction on the various bodies of wax. The wire can be obtained in spools from the ten cent store.

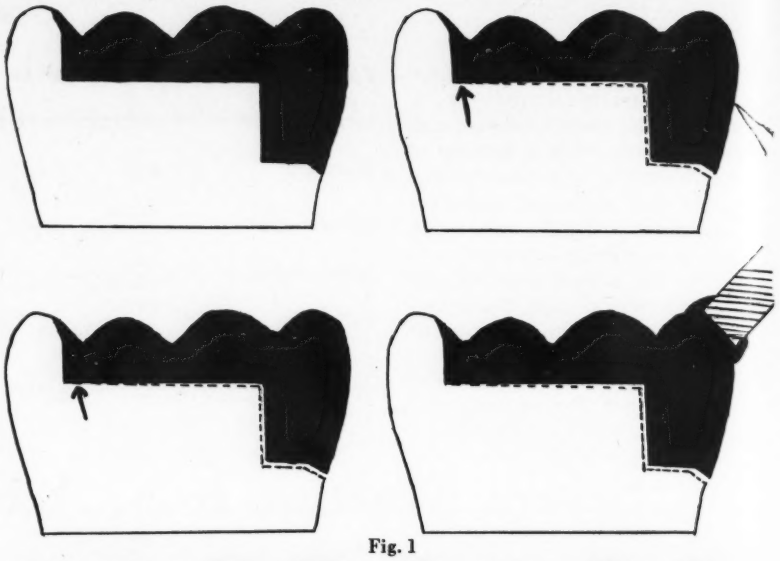


Fig. 1

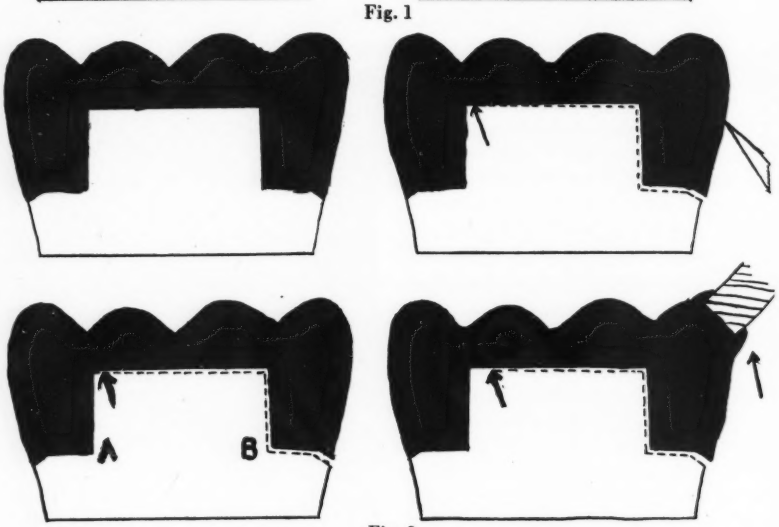


Fig. 2

Figs. 1 and 2—Most common method of removal of pattern with explorer or sprue, both of which result in distortion.

Technique

1. The insertion of the U-shaped wire is done by holding the wire in heated points of cotton or soldering pliers. The heat from the pliers is conducted into the U-wire sufficiently so that its insertion is easily accomplished. Care should be taken not to overheat the pliers inasmuch as too much heat might be conveyed into

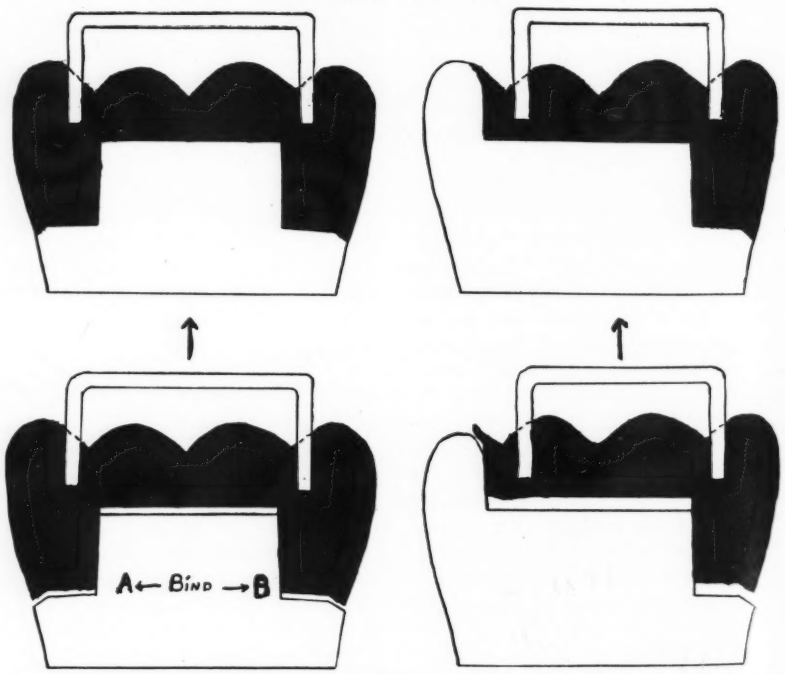
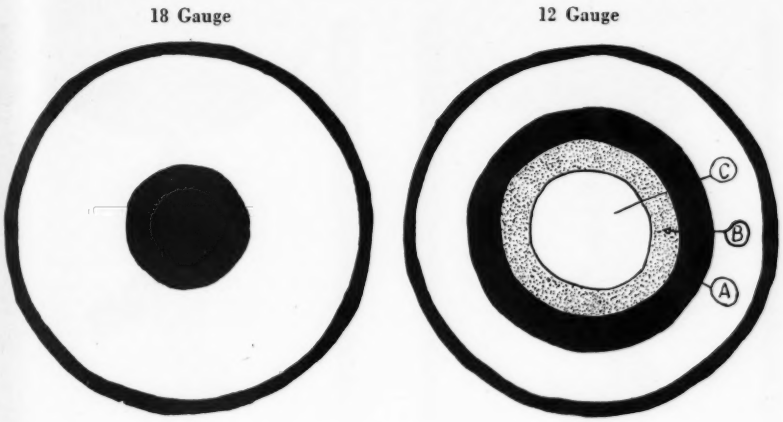


Fig. 3—Prevention of distortion can be had by use of a fine U-shaped wire inserted in wax pattern to enable lifting of entire pattern with uniform traction at every point.



Diameter	.04	Diameter	.08
Circumference	.125	Circumference	.250
Area	.00125	Area	.00502

Fig. 4—Sizes of sprue pins employed.

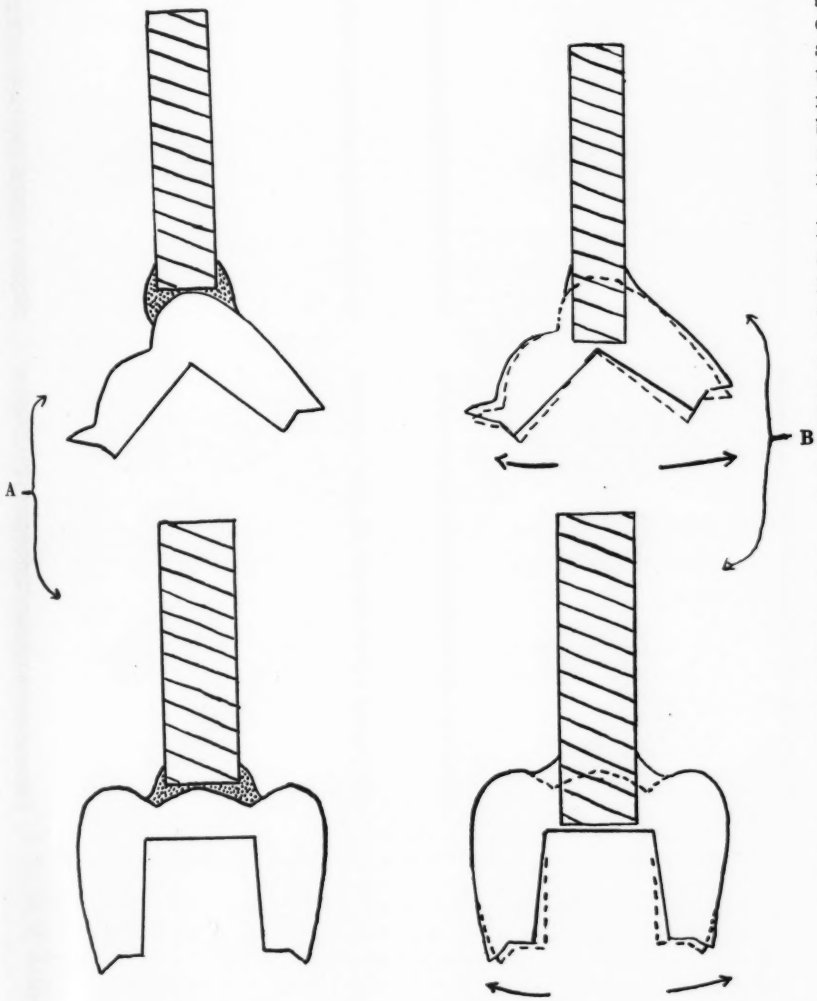


Fig. 5—A, Sprue inserted into warm wax; B, result of inserting heated sprue directly.

the pattern. When the wire is inserted to its proper depth the pliers are released, thus preventing excess heat in the pattern.

2. With cold pliers, grasp the wire and gently pull straight upward. In this manner the pattern is removed with equal traction at every point (Fig. 3).

3. Sprueing is now done. It is exceedingly important that it be done properly, for up to this stage a wax pattern is had that fits accurately. Sprue pins, from 12 to 18 gauge, should be used according to the size of the inlay (Fig. 4). Brass pins are the best. Sprues of the largest diameter should be used to prevent porosity at the union of the sprue with the main body of the casting. The larger the sprue hole, the longer it takes the gold in it to congeal and the greater the amount of gold that can be fed through the sprue hole before the gold congeals; and consequently, the denser the casting will be with less shrinkage. The shorter the sprue hole, the longer the gold in it will remain molten, inasmuch as more gold can be thrown through it before solidifying, thus resulting in a denser casting.

4. After the correct size sprue hole has been selected, a small drop of sticky wax is placed at the bulkiest portion of the pattern. The selected sprue is immediately inserted into the warm wax; thus no excess heat is carried into the pattern (Fig. 5, A). If a perfect seal is desired, a very thin blade instrument should be used. Fig. 5, B shows what happens when a heated sprue is inserted directly into the pattern.

5. Having completed the sprueing and mounting on the crucible former, again heat the cotton pliers, gently grasp the U-wire, and when sufficient heat has been conducted into the wire, but not until then, remove it. In this way there will not be any holes left by the U-wire; should small holes remain, heat an explorer point and merely touch the hole.

6. Although reservoirs are not necessary in making small castings if the sprue is large enough, it is strongly advised on M-O-D's and proximal-occlusal cavities. The use of the reservoir prevents shrink spot porosity. It should be placed close to the wax pattern and connected by a heavy channel to facilitate the drawing out of the area of porosity into the center of the

reservoir (Fig. 9). Do not commit the error of making the reservoir too small for the size of the inlay or too far away from the pattern in which cases the reservoir will act only as a button (Figs. 6, 7, and 8).

7. After the wax pattern has been mounted on the crucible former, it is cleaned with a solution composed of equal parts of tincture of green soap and hydrogen dioxide. This removes any die lubricant or saliva which might be on the pattern. In rinsing the wax pattern, use only room temperature water; then dry thoroughly with an air syringe being sure to remove all moisture on the surface. Moisture tends to create peduncles resulting in rough and ill-fitting castings.

8. The choice of investment is individual; however, in my hands, I obtain excellent results with Ransom and Randolph gray investment. The desirable qualities are increased with a decrease of water content; therefore, two mixes of investment are used: the first, a thick mix and the second, thin. A set of measuring spoons serves as an excellent measuring device by using the tablespoon and teaspoon. In a clean mechanical spatulator are placed two teaspoonfuls of distilled room temperature water and two tablespoonfuls of tightly packed investment. The mix is begun with a hand spatula to insure the initial union of water and investment. By use of a mechanical spatulator a homogeneous mix is had, because the entrapped air bubbles are eliminated from the investment to insure a smooth casting. A minimum of 151 turns of the blade is required.

9. With an inlay paint brush, the thick mix is painted on the wax pattern; the investment is always allowed to be pushed ahead of the brush. This prevents a bridging across of angular depressions.

10. After the wax pattern has been painted, the investment should be vibrated down with a rough instrument. When the pattern has been covered to the depth of one eighth inch, more of the thick mix is added about the sprue pin down to the crucible former. Be sure that enough mix covers the crucible facing to secure a lip of smooth investment.

11. A common salt shaker filled with dry investment is next used to sprinkle the case. Again gently vibrate by stroking the crucible former with a rough instrument, thus moisture is drawn from the inner investment, reducing its water content and supplying additional moisture for the application of more dry investment.

12. This procedure is continued until a thick sponge core is formed. This core acts as a cushion stabilizer in the center of the investment, allowing free expansion in all directions and thus aiding in securing a true and unwarped casting.

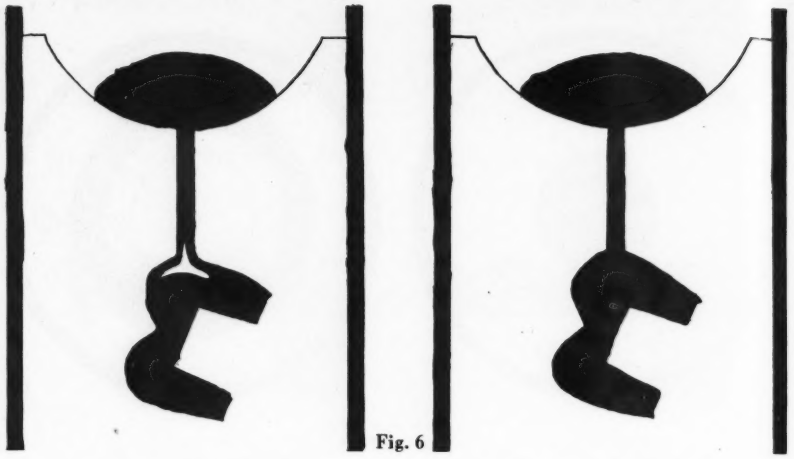


Fig. 6

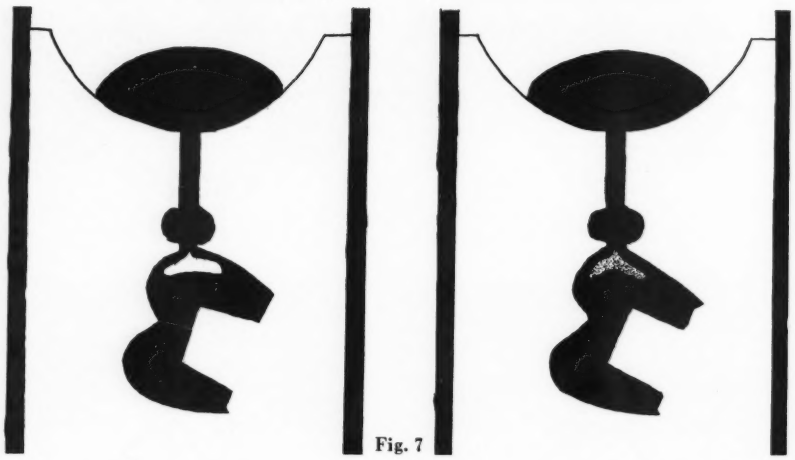


Fig. 7

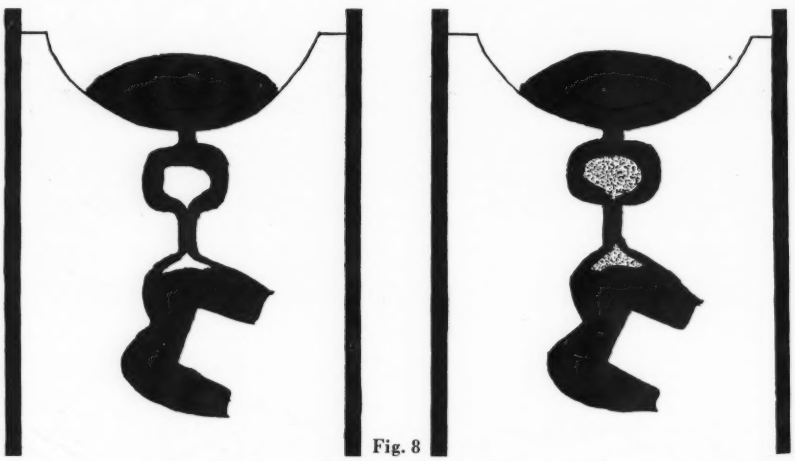


Fig. 8

Figs. 6, 7, and 8—Reservoirs too small for size of inlay or too far away from pattern act merely as sprue buttons.

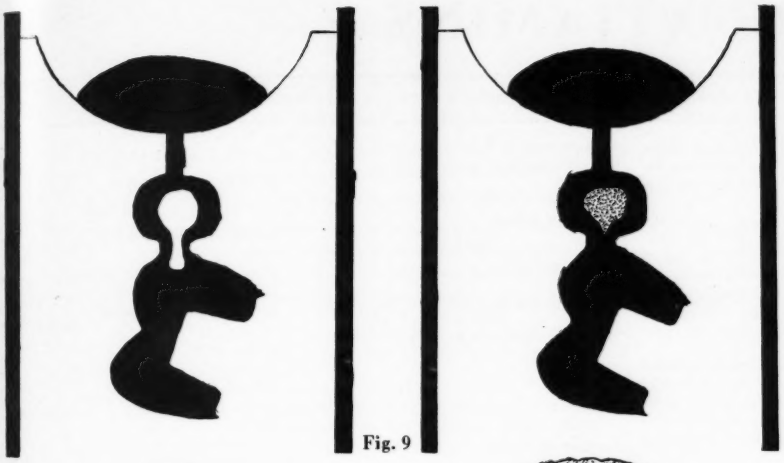


Fig. 9

Fig. 9—Reservoir to prevent shrink spot porosity, placed close to wax pattern and connected by a heavy channel to facilitate drawing out of area of porosity into center of reservoir.

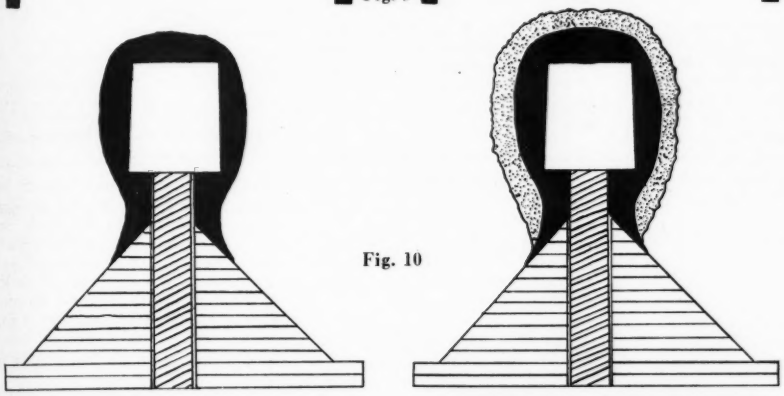


Fig. 10

Fig. 10—Excess layer on crucible former is cut down with a knife just inside lip of thick investment.

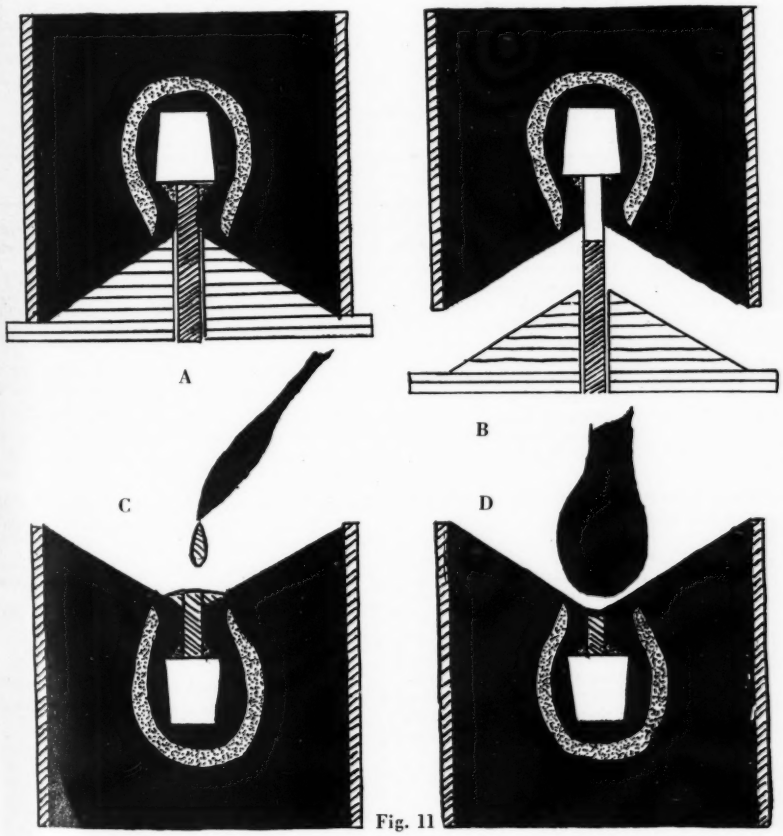


Fig. 11

Fig. 11—A, Ring filled with number one mix for shorter setting time; B, ring removed from crucible former after setting of investment; C, inlay wax dropped into sprue hole to prevent small particles of investment from falling into sprue hole; D, excess wax removed with scraper and sprue hole completely sealed.

13. The excess layer which lies upon the crucible former is cut down with a knife just inside the lip of thick investment (Fig. 10).

14. The next step is to fit the inlay ring on the crucible former in order to receive the outer investment or second mix. Inasmuch as this outer investment acts only as a framework, it is of little importance. For this mix, use level tablespoons of investment to the same amount of water. The mix is spatulated with a hand spatula and poured into the ring while vibrating. The investment will set in from 20 to 30 minutes; however, the length of time depends on the thickness of the second mix. If a shorter setting time is desired, use a number one mix to fill the ring (Fig. 11, A).

15. When sufficient time has elapsed for the setting of the investment, the ring is removed from the crucible former (Fig. 11, B). The sprue is slightly heated and removed. To be assured that no small particles of investment fall into the sprue hole, a drop of inlay wax is dropped into the spruehole (Fig. 11, C). Then, with a Kingsley's scraper the excess wax is removed to leave the sprue hole completely sealed (Fig. 11, D).

Factors that result in rough castings are: (1) an unclean wax pattern; (2) too high water ratio; (3) improper spatulation; (4) careless investing; (5) too rapid burning out, and (6) overheating the gold.

Wiggins Building.

THE VITAMINS

NAME	CHEMICAL NATURE	SPECIAL FUNCTION	REQUIREMENTS	CHIEF SOURCES
A "Anti - infective vitamin" is a misnomer, or, at least, an overstatement.	Beta-Carotene A naturally occurring substance in foods necessary in diet either as vitamin A or in the form of carotin which can be changed to A.	Necessary for the integrity of the epithelial tissues, for normal growth, and to escape certain diseases. Vitamin A will not prevent infections, but will prevent infections from retarding recovery, or normal development after recovery, by mild vitamin A deficiency. Stores of vitamin A are depleted in the body during long and chronic infections and must, therefore, be supplied in the diet in greatly increased amounts. NOTE: Careful investigations have not proved that by consumption of large amounts of A, one acquires any increased ability to resist infection. There is some evidence but no proof that common colds might be resisted through large intake of vitamin A when absorption is adequate.	Estimates for best health--not alone to prevent deficiency: Growing Child: 3000 International Units a day. Adult: From 6000 International Units to 8000 daily. Nursing Mother: 10,000 Units daily. Infants: Mother's milk should be supplemented with 1000 to 3000 Units daily. NOTE: Individual differences exist with regard to response and administration. The amount of A absorbed regardless of the amount ingested is directly proportionate to the amount of fat in the blood. The ability to transform factors to A varies likewise. It is believed that continued ingestion of large quantities of oily laxatives interferes with absorption of A. *NOTE*: DIETARY INTAKE NECESSARY TO PREVENT *GENERAL* NUTRITIONAL DEFICIENCY: Milk: ½-1 qt. Eggs: 1-2 Meat, Fowl or Fish: 1 serving Butter: 1 tablespoon Vegetables: 3 servings, including 1 green leafy vegetable Fruits: 2 servings, including 1 raw fruit.	Fish liver oils (halibut, cod, turbot) cream or whole milk butter liver yolk of egg green leafy vegetables brussel sprouts green peas green string beans yellow cornmeal sweet potatoes prunes apricots* yellow peaches papayas tomatoes watercress *Apricots are richer than any other fruit in vitamin A. NOTE: Spinach and carrots are usually mentioned as sources of vitamin A which they do richly contain. According to recent observations, however, the carotenoids in spinach and carrots may be useless in the human diet. There is no proof of this, but the results of the investigations so far are a warning not to rely wholly on vegetable sources for vitamin A. Also, in case of diseases of the liver, vitamin A must be had from animal sources, not from vegetables.

Prepared by the Editorial Staff of THE DENTAL DIGEST from the following sources:

Borsook, Henry: Vitamins, What They Are and How They Can Benefit You, New York, The Viking Press, 1940.

Haden, Russell L.: Specific Nutritional Deficiency Disease, J. A. D. A. 28:726 (May) 1941.

Symposium: Nutritional Deficiency, Chicago Medical Society, November 15, 1939.

Names of authorities for statements made in text other than those derived from Borsook and Haden are given in parentheses and represent participants in the symposium cited.

CLINICAL CONDITIONS ASSOCIATED WITH DEFICIENCY	SYMPTOMS AND LESIONS	COMMENTS
The possibility of vitamin A deficiency must be considered in a) skin disturbances b) neuritis, cramps, paralysis c) pigment metabolism d) night blindness; xerophthalmia; other vague eye disturbances e) disturbances of reproduction (—*Frederic T. Jung*) In Children: subnormal growth; poor appetite; greater susceptibility to infection; impairment of healthy development of teeth and bones; life span is likely to be shorter. In Adults: glare blindness* and subnormal vision in dim light (definite relationship between visual purple and A); xeroph:halmia (severe infection of eyelids and eyeball in young; eyeball runs with pus); stone in kidney or ureter. (Vitamin A therapy gives no cure; evidently a disturbance in the chemistry of the body, so that vitamin A cannot be utilized.) Factors Predisposing to Deficiency: a) inadequate intake: b) inadequate absorption; c) inadequate utilization; d) increased requirement. *Glare blindness is sometimes helped by administration of large doses of the B complex along with vitamin A rather than vitamin A alone.	Epithelial defects: atrophy, scaling, dermatitis, pigmentation, ulceration, cornification dryness of skin and eruptions where hair comes through the skin—anywhere except the face. Babies: increased susceptibility to eczema and napkin rash. Adults: Gastro-intestinal disturbances; sometimes sterility because of failure of the glandular elements of the reproductive apparatus. Characteristic disturbances occur in lining membranes of eyes, bronchial tubes; abnormal susceptibility to respiratory disease, intestinal, urinary, and reproductive tracts. Difficulty in driving at night.	Vitamin A deficiency runs parallel with a dietary deficiency of animal fats (except lard which has none). Vitamin A is easy to obtain; therefore, vitamin A deficiency is unnecessary in the diet. In the selection of vegetables, if there are two forms, one yellow and the other white, or one green and the other white, select the yellow or green. COOKING: Vitamin A may be lost in cooking, canning or storing—if fats become rancid or are heated in the presence of air. It is better to bring milk quickly to a boil than to keep it warm in an open pot. Vitamin A is lost in butter in frying. NOTE: Increased intake of vitamin A, provided absorption is normal, would reduce the number of accidents while driving at night.

THE VITAMINS

"Someone with a genius for phraseology has classified hunger into hollow hunger and hidden hunger. Hollow hunger is the form induced by the absence of enough food; hidden hunger occurs in people who satiate themselves with vast quantities of food and fail to realize that certain minimal amounts of protein, carbohydrates, fats, mineral salts and vitamins are essential to health. Here in America, most prosperous of all nations in the world, both types of hunger are apparent."—From an Editorial, National Nutrition, The Journal of the American Medical Association, 116:2854 (*June* 28) 1941.

NAME	CHEMICAL NATURE	SPECIAL FUNCTION	REQUIREMENTS
B Complex, Including:		Two syndromes respond to B complex: polyneuritis; skin lesions	Requirements of B Complex: Vary according to weight and diet. Increased thyroid activity brings with it a greater need for the B Complex—(Edward Allen). Intake is affected by absorption and utilization. This applies to all the vitamins as well as the B Complex. No indication that there is danger in an excess of the B Complex.
B_1	Thiamine or thiamine chloride		
Nicotinic acid	Nicotinic acid or nicotinic acid amide		
B_2 (or G)	Riboflavin or flavin		
B_6	Pyridoxin		
Pantothenic acid	Pantothenic acid		
And others	Not yet chemically identified		

NAME	SPECIAL FUNCTION	REQUIREMENTS	CHIEF SOURCES
Thiamine (B_1)	Anti-Neuritic Factor: Necessary for the integrity of nerve tissues. Unites in the body with phosphoric acid to make an enzyme necessary for the metabolism of sugar. Tonic even in well people.	For buoyant health 4 or 5 times the quantity of B_1 needed to prevent beri-beri. Adult: From 5 to 7 International Units of thiamine per pound of body weight per day and requirement is greater with increase in metabolism. Children: About 10 International Units per pound of body weight per day. Thiamine is more effective taken intravenously than by mouth. (—Tom Spies)	Part of the wheat grain usually thrown away: "the scalp of the sizings" or "middlings" plus germ. Wheat germ. Salads and green vegetables. Fresh fruits (bananas: for children). Milk. Fresh meat. Peanut butter (rich source). Brewer's yeast (unpalatable)

CLINICAL CONDITIONS ASSOCIATED WITH DEFICIENCY	SYMPTOMS AND LESIONS	COMMENTS
Form of neuritis and general weakness called beri-beri or polyneuritis. The neuritis of pregnancy is really beri-beri. Anorexia. Additional stresses that may bring on the condition: when intake is barely sufficient to prevent beri-beri: pregnancy; infections with fever; hyperthyroidism; increased physical work: expeditions; camping; any condition causing an increase in metabolism; neuritis associated with enlargement of the heart (B complex of diet should receive attention); chronic arthritis (B complex); nausea and sickness following massive irradiation with roentgen rays. Factors Predisposing to Deficiency: a) inadequate intake; b) inadequate absorption; c) increased requirement; d) inadequate utilization; e) loss by excretion.	Atrophy of tongue. Muscle weakness, paralysis and paresthesia. Unexplained edema	B_1 deficiency occurs where polished rice is the main item of diet or white flour is used instead of whole grain at the same time that less milk is used. B_1 is not stored in the body, or at least to only a very limited extent. COOKING: Water of vegetables should not be discarded after cooking but should be incorporated in recipes somehow. Soda should never be used in cooking vegetables—partly destroys vitamins. Air should be excluded during cooking: double-boiler is preferable to open pot.

THE VITAMINS

NAME	CHEMICAL NATURE	SPECIAL FUNCTION	REQUIREMENTS	CHIEF SOURCES
Nicotinic acid		Necessary for the integrity of dermal tissues. Specific in the treatment of pellagra	Given only by mouth unless patient is unconscious—(Spies). In pellagra, dosages in the past have been too small: 500 mg. in 50 mg. amounts given an hour apart.—(Spies) or 1/5 lb. dried brewer's yeast or 1-2 ounces of brewer's yeast with 1/1000 of an ounce of nicotinic acid—for therapeutic amounts. No objection to synthetic products (of any of the vitamins) but for prevention, goal should be through normal diet of natural foods.—(Tom Spies and C. A. Elvehjem)	Yeast Diet of { meat, milk, eggs, fresh green vegetables, fruit }

CLINICAL CONDITIONS ASSOCIATED WITH EFFICIENCY	SYMPTOMS AND LESIONS	COMMENTS
Glossitis Stomatitis Dermatitis SYNDROME: Pellagra In severe cases of pellagra mind is affected; patient is disoriented even in early stages before pellagra can be diagnosed. Delirium tremens is a form of acute pellagrous insanity. In alcoholics, polyneuritis and the pellagra-like syndrome may not represent true pellagra but the deficiency results from food starvation when only alcohol is consummed for days and no food is taken.—(Don C. Sutton and John Ashworth) Nicotinic acid is the main deficiency in pellagra and is therefore used in treatment. There may be an associated tetany. Vincent's infection, a bacterial disease, can be treated with large doses of nicotinic acid because a mild nicotinic acid deficiency lowers the resistance of the tongue tissue, so that the organisms can invade it successfully. Factors Predisposing to Deficiency: a) inadequate intake; b) inadequate absorption; c) inadequate utilization: d) inadequate distribution; e) increased requirements.	Mucous membrane lesion White spots if Vincent's infection is superimposed. Skin manifestations: { glossitis, swelling, fiery red, limited, usually bilateral } Mucous membrane symptoms of pellagra are frequently misdiagnosed.	Prevention requires a diet that is expensive f the poor. Synthetic B Complex should be added commercially to { flour, cornmeal, sugar } during processing Pellagra is a deficiency disease of the poor whe corn forms a large part of the diet. In U. S mainly in South. 70% mortality if untreated. Occurs between 20 and 40 but may be seen a any age. No two cases are exactly alike. Reaction is definit and quick to nicotinic acid increase in gastri juice.—(Tom Spies)

THE VITAMINS

NAME	SPECIAL FUNCTION	REQUIREMENTS	CHIEF SOURCES
Riboflavin (B_2) or (G) or Flavin	Necessary for growth Riboflavin is a part of the mechanism whereby food materials are burned in the body.	Have not been accurately determined. Provisionally: 1.5 mg. daily for children under 5 years. Adults: 2 or 3 mg. daily. Deficiency requires many times preventive amounts for therapy. No danger of overdosage but neither diagnosis nor treatment should ever be attempted by laymen.—(Tom Spies)	Same as B_1 (wheat germ) except cereals are not good sources. Baker's or brewer's yeast is the best source. Cow's milk (Human milk contains only 1/3 the amount of B_2 contained in cow's milk.) Eggs, cottage cheese Green leafy vegetables: turnip greens, carrot tops, broccoli flowers & leaves } richest spinach, lettuce, cabbage, beets and carrots } half as rich as above Dried soy beans (very rich source) other beans only 1/10 as much. Avocado; peas Liver and kidney (very rich); beef, pork and veal, not so much. Crab, fish, oysters Peaches, pears, prunes, tomatoes, peanuts.

CLINICAL CONDITIONS ASSOCIATED WITH DEFICIENCY	SYMPTOMS AND LESIONS	COMMENTS
Conjunctivitis (Inflammation of eyeball) Cheilosis (Cracking at angles of mouth) Predisposing Factors: a) inadequate intake; b) inadequate absorption and assimilation; c) increased requirements.	Corners of eyes and underside of eyelids may show dermatitis involvement. Glossitis and stomatitis; marked redness of tongue and lips Dermatitis Pigmentation of skin Atrophy Detailed characteristic signs: reddening and cracking of skin, especially at angle of lips, and fissures (rhagades); greasy shedding of skin at folds between nostrils and cheeks.	Ariboflavinosis used to be confused with pellagra. Riboflavin deficiency likely to occur in anemia—(Howard L. Alt) Common in southern United States; but not rare farther north. Growing evidence that B_2 is necessary for health of the eyes, especially to prevent the development of cataracts—no proof as yet, but response to B_2 administration is suggestive. Precautions in cooking: same as for B_1 but B_2 is less affected by heat than B_1. B_2 remains stable to freezing and thawing.

NAME	SPECIAL FUNCTION	REQUIREMENTS	CHIEF SOURCES
Pyridoxin (B_6)	*Appears* to be useful in conjunction with B_1 and E in the treatment of certain degenerative diseases of the human nervous system. Possible tonic effect in large doses. Only certainty is that B_6 is necessary as found in foods for human nutrition.	Unknown	Dried yeast Liver and meat Rice polishings Fish Whole wheat
Pantothenic Acid	Deficiency produces a disease in chicks of the skin and plumage. Role in human nutrition is so far undetermined.	Unknown	
At least two more members of the B Complex are known to exist but these have not yet been chemically identified	"Anti-gray-hair factor"—not established but study is continuing.		

THE VITAMINS

NAME	CHEMICAL NATURE	SPECIAL FUNCTION	REQUIREMENTS	CHIEF SOURCES
C	Ascorbic acid	Necessary for the integrity of the epithelium of blood vessels and for framework of tissues. Mild deficiency lowers resistance to infection but no proof that large intake of vitamin C will raise resistance to infection.	10 mg. of vitamin C will protect a baby from scurvy. Breast-fed baby receives four or five times this amount. Also, growing child requires four or five times this amount. Needs of fetus are supplied direct through placenta. — (Chester J. Farmer) Adults: 40 mg. daily—about 3 ounces of orange juice to prevent scurvy. Optimal amount: 1 mg. per pound of body weight per day. (3 or 4 mg. daily per pound of body weight until 100 or 150 mgs. are being taken is not excessive according to some). A tumblerful of orange juice supplies more than this. Chester J. Farmer and Arthur F. Abt believe that the normal adult requires from 50 to 60 mg. Prolonged hard muscular work; severe climatic cold; infections, and restricted diets call for a great deal more than normal amounts of vitamin C, which must be provided in concentrates of synthetic vitamin form.	Water-soluble: runs parallel with vitamin B among fruits and vegetables, except for citrus fruits which contain the most C. Pure crystalline vitamin C. orange, lemon, grapefruit } equally potent weight for weight Stored oranges lose some potency—as much as 40% in a month's storage can be lost. Nothing is lost on freezing. Orange and lemon peel: about three times as potent as orange and lemon juice, but marmalade is negligible. Tomato juice has about one-half the potency of citrus juices. Canned is as good as fresh juice. strawberries, raspberries, gooseberries } half as rich as orange juice melons, banana, avocado, currants, papayas, tangerines, potato (white, boiled) (for children), brussel sprouts, bean sprouts, watercress, peppers, spinach
P	Ascorbic acid (?)	An additional (postulated) anti-scorbutic factor.	Unknown	Lemon juice (?) and lemon peel Paprika
D: **D_2** **D_3** **D_7**	Calciferol (activated form of ergosterol: fat soluble) Hydrocholesterol Dehydrocholesterol (precursor in the skin and in the secretions of animals). Substance given by ultraviolet light when body is exposed. — (Smith Freeman)	Vitamin D is necessary for the normal metabolism of bone and teeth; that is, necessary for normal calcification, although it does not become part of the bones and teeth itself. Function to increase retention of phosphorus and calcium in the body. Prevalent opinion is that it works toward an increased retention rather than a decreased loss.—(Smith Freeman) Has a bearing on the coagulability of blood.	Requirement of D related to ratio of calcium and phosphorus in the diet. Rate of growth also affects requirement of vitamin D. Part liver plays in absorption is controversial. Bile must be present in intestine to insure absorption of D. Adult requirement of vitamin D is uncertain, but it is doubtless needed as obtained through sunlight and irradiated milk. Sometimes a million units are needed for resistance to rickets. Serum calcium must be watched when large doses are given.—(Smith Freeman)	Limited distribution in food: Cod liver oil* other fish oils; sardines, tuna butter milk: If fortified by irradiation is the best and most convenient source. Sunlight: Most important source of vitamin D which is only vitamin known to be absorbed adequately through the skin. *Aspiration of cod liver oil can cause pneumonia and death.—(Bengt Hamilton).
E (Misnamed: Anti-sterility vitamin)	Alpha-tocopherol	Necessary for normal reproduction Nausea is reduced by vitamin E and the disposition is improved. —(Edward Allen) Treatment with E has given successful results in certain spinal diseases.	?	Vegetable oils: wheat germ oil (richest) cottonseed oil corn oil Vitamin is destroyed when oils become rancid. Leafy green vegetables: lettuce spinach watercress
F (Advertised: "Skin Vitamin")	Linoleic acid and Linolenic acid	?	There are no data regarding human requirement. Deficiency in human beings is difficult to produce.	Salad dressing (corn oil)
K	Methyl-phytylnaphthoquinone	Necessary for the formation of prothrombin which is necessary for the clotting of blood.	Cannot be administered without bile salts.	Extract of alfalfa mixed with bile salts: Now manufactured commercially. Green leaves: spinach, lettuce, green cabbage.

THE VITAMINS

CLINICAL CONDITIONS ASSOCIATED WITH DEFICIENCY	SYMPTOMS AND LESIONS	COMMENTS
Hemorrhage due to vascular defects. Hemorrhagic infiltration into gums. Will not occur in child who does not yet have teeth nor in adults who have lost their teeth.—(Chester J. Farmer and Arthur F. Abt) Lack of vitamin C affects vessels of gums causing bleeding and interference with normal structures of teeth and bone. (Pyorrhea and spongy gums: lack of vitamins A and C.) Easy bruising. SYNDROME: SCURVY Factors Predisposing to Deficiency: a) inadequate intake; b) inadequate absorption; c) increased utilization; d) increased requirements.	In Children: Subnormal rate of growth; tendency to bleed easily; some anemia; lowered resistance to infection. Early Scurvy: (Diagnosis of early scurvy can be made only by a physician trained in laboratory methods of vitamin chemistry): pallor, wasting, reluctance to move because of pain; limbs swollen and discolored; child is fretful because of rapid pulse and breathing. Hemorrhage of gums may appear if teeth have erupted (late sign). In infants onset between 6 and 9 months —not before. In Adults: Tendency to bleed easily; skin: dry, rough; bleeding spots appear under skin; lowered resistance to infection; loss in weight; progressive weakness and pallor; Later signs: gums become swollen and bleed easily; teeth become loose and fall out.	The actual clinical syndrome of scurvy grows more and more uncommon; nevertheless more of it exists than is necessary. Two problems remain: *Clinical*: Recognition of the disease in its earliest stages. *Educational*: Prevention of the disease. Therapeutic claims run from cure of insomnia to whooping cough—most claims are unverified—(Chester J. Farmer and Arthur F. Abt) COOKING: Heat, Air, Soda } Cause more destruction of vitamin C than vitamin B Lost in cooking vegetables, especially if water is discarded or soda is used. C content drops in boiling of milk. Heating in presence of air causes rapid destruction of vitamin. Canned vegetables contain only half the vitamin C content of fresh vegetables.
Scurvy (?)		
SYNDROME: RICKETS, a disease of children Deficiency is uncommon in adults. Other conditions in which vitamin D has been used in treatment with varying reports: osteomalacia celiac disease arthritis hyperparathyroidism (to reduce calcification) Caries and pyorrhea* Lack of calcium, phosphorus, and vitamin D affect structures of both teeth and bones. Indirectly dental structures depend on normal nutritional status. Example: Lack of erythrocyte-maturing factor leads to pernicious anemia in which nutrition of dental structures may not be normal. *Status with regard to adult caries is as uncertain as ever. Pits, fissures, and hypoplasia resulting from a deficiency of vitamin D may make teeth more susceptible to caries.—(Smith Freeman) Factors Predisposing to Deficiency: a) inadequate intake; b) inadequate absorption; c) increased requirement.	Softening of bones and teeth. In other conditions than frank rickets or osteomalacia, in which vitamin D deficiency is apparent, the possibility of vitamin D deficiency should be considered along with other etiologic factors in associated clinical conditions mentioned.	Teeth laid down about eighth week of pregnancy; therefore vitamin administration must begin early to do any good. Deficiency in pregnancy is due to a multiple of factors—not only one.—(Edward Allen). Over-irradiation may produce toxicity. The only vitamin at present in which overdosage is known to produce harmful results.—(Smith Freeman).
In Men: Deficiency irreparably injures tissues of testes which produce the sperm and consequently results in sterility. In Women: Severe deficiency of E makes it impossible to carry through pregnancy and early miscarriage occurs. Condition is not irreparable as in men. Vitamin E therapy can correct the condition.	Lack of reproduction Represent subclinical avitaminosis—probably due to dietary vagaries of pregnant women when avitaminosis is not an economic problem.—(Edward Allen)	
?		Vitamin F face creams have appeared on the market for beauty purposes. "Nutritional science is in no position to pass on such preparations as aids to beauty, though it may have its doubts. At any rate, 'vitamin F' applied externally is certainly no more effective than when taken by mouth; and getting the vitamin by smearing oneself with face cream is a bothersome and expensive means of securing a negligible amount." —(This is a direct quotation from Borsook's book, VITAMINS.)
SYNDROME: Pathologic hemorrhage Serious deficiency of prothrombin must be present before patient will bleed. Occurrence after operation, but may appear before.	Abnormal bleeding. GUMS AND MUCOUS MEMBRANES ARE INVOLVED.—(Warren H. Cole) Occurs in jaundiced patients.—(Warren H. Cole)	Not much is known. Pregnancy hemorrhage is comparable to jaundice. Transfusion prevents hemorrhage because prothrombin is poured into blood. Bank blood does not contain much prothrombin.—(Edward Allen) Therapy is not effective in hemophilia.—(Warren H. Cole).

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National Dental Association, twenty-eighth annual meeting, Richmond, Virginia, August 11-15.

•

Southern California Dental Society, annual meeting, Los Angeles, September 8-10.

•

Southern Society of Orthodontists, regular meeting, Raleigh, North Carolina, September 29-30.

•

Montreal Dental Club, seventeenth annual fall clinic, Mount Royal Hotel, Montreal, September 24-26.

•

American Public Health Association, regular meeting, Atlantic City, New Jersey, October 14-17.

•

American Dental Association annual meeting, Rice Hotel, Houston, October 27-31.

•

American Dental Assistants' Association, seventeenth annual meeting, Texas State Hotel, Houston, October 27-31.

•

American Dental Hygienists' Association, eighteenth annual meeting, Lamar Hotel, Houston, October 27-31.

•

American Academy of Periodontology, regular meeting, Houston, October 23-25.

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American Association of Public Health Dentists, regular meeting, Houston, October 27-31.

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Odontological Society of Western Pennsylvania, annual meeting, William Penn Hotel, Pittsburgh, November 11-13.

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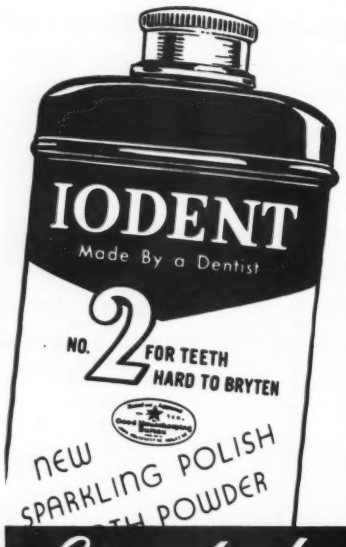

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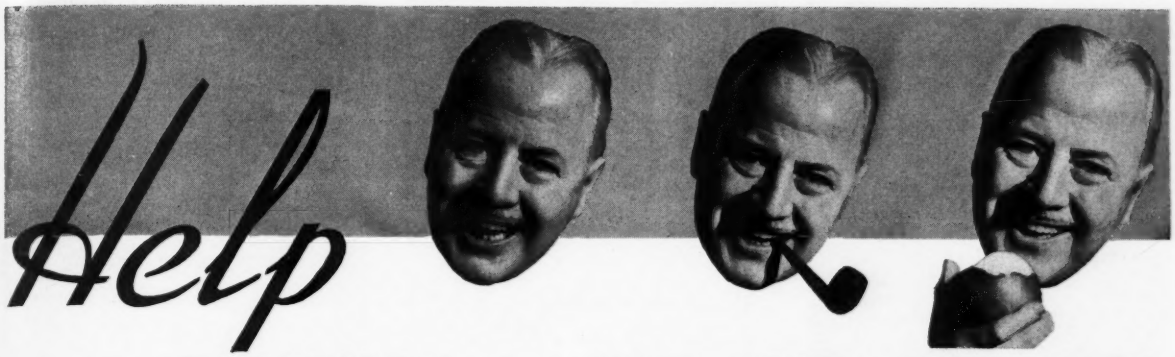

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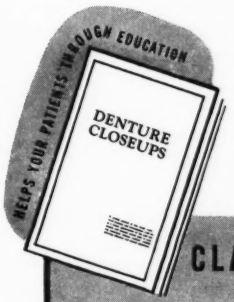

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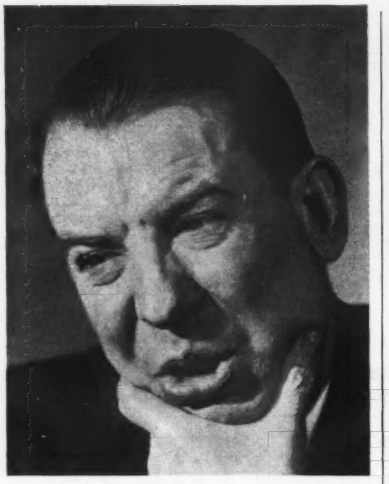

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NOTES ON THE

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Teach too Much? . . .

It is no new idea that words are dangerous tools. The communication failures among us cause most of our troubles. We meant one thing and said something else and the person who read us or heard us often makes an interpretation entirely different from either our meaning or what we expressed. The old saw that the pen is mightier than the sword is not altogether true but has enough truth in it to crop up repeatedly by way of example. All the modern day propagandists employ the pen to prepare their conquests; they use the word and the pen in advance of the instruments of war. They soften the resistance of large populations by spreading rumors making false emphasis and distorting facts.

Everyone who expresses something different from our own beliefs and notions is not a propagandist, however. We must constantly remind ourselves that many expressions that are entirely contrary to the beliefs that we hold are honest interpretations and opinions. "Teach too Much" is an editorial in point from a responsible newspaper:

"Here is a new idea, which is not likely to become popular in this land where we want to know things.

"The New Jersey State Board of Dental Examiners has been asked to drop the Harvard Dental School from its accredited list because Harvard proposes to teach its students too much!

"The objector alleges that Harvard's plan to require its dental students to obtain degrees in both medicine and dentistry would lead to the setting up of supposed super-dentists.

"In other words, the Harvard dentists would know too much and might be able to find a method of preventing tooth decay by the one practitioner instead of consulting half a dozen.

"Although this is a horrible thought —to some—it is not likely that the

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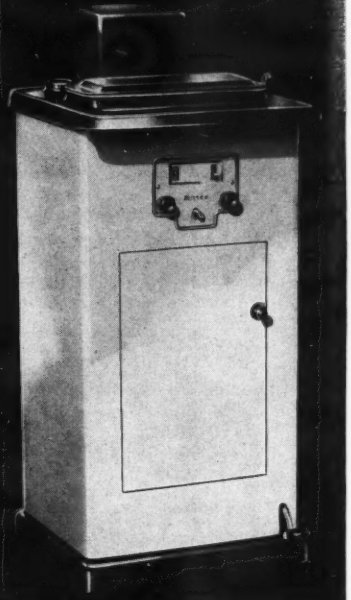

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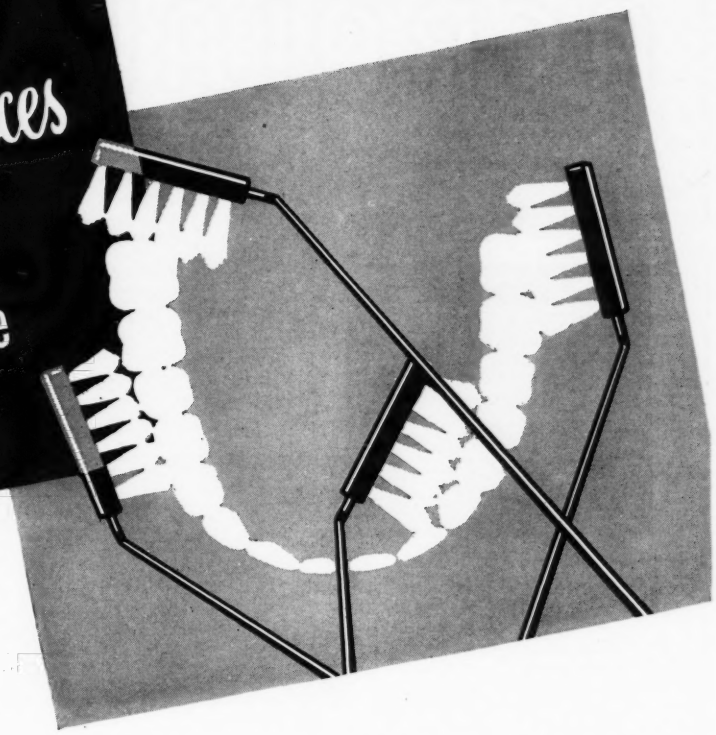

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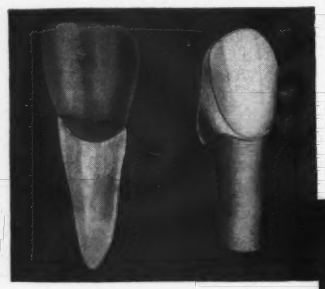

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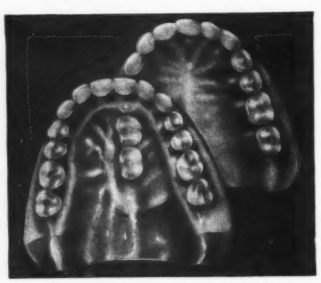

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general public will be at all alarmed." (*San Francisco Call Bulletin*, June 2, 1941.)

From this editorial interpretation, we are to deduce that the New Jersey State Board of Dental Examiners is antagonistic to progress in dental education. The fact is that the New Jersey State Board is not fearful that the new Harvard Dental School will teach too much but that it will teach too much that is not dentistry and too little clinical dentistry, and by not teaching enough clinical dentistry, the people who apply for licenses will make poor prospective *dental* practitioners in the state of New Jersey.

It is too early to make any sweeping assertions regarding the Harvard educational experiment, but a doubt spreads into being when we remember that the new Harvard school combines the medical and dental degree in a five-year course, which is just about half the time that these two courses now require if pursued separately.

Words in print are a source of awe to many people. The written word spells authority to them. The fact that something is in black and white is sufficient validity to some readers. Words on paper are written by men; words find themselves on paper created by men; words appear in type composed by men—all through the string of events nothing supernatural or out-of-the-world intervenes. From the moment of idea-conception or inspiration to the final appearance in print the product of mortal mind opens all expressions to every source of error. It may sound weird for an editor to tell people that they should not believe everything they see in print, but that is exactly what every honest editor should say. Writers are subject to the same fallacies in their thinking as are other people, and because they are likely to be more articulate, their utterances should be read critically.

Fish Tales in Dentistry . . .

Wherever dentists gather, particularly if the corn juice flows, the subject of self dental treatment is likely to creep into the conversation. These tales are not unlike tall fish stories. Dentists, to hear them tell, perform all manner of self-operations upon themselves: they extract their own teeth, including lower third molars; they rise in the middle of the night to incise acute alveolar abscesses;

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Vince is sodium perborate at its best, made palatable for oral use. In your next case of Vincent's infection, put Vince through its paces—as a paste for office treatment, as a dentifrice, mouthwash and gargle for home use. A trial supply of Vince, to help you in making your own observations on its usefulness, will gladly be sent you. Please request it on your letterhead. Available in 2, 5 and 16 ounce tins.

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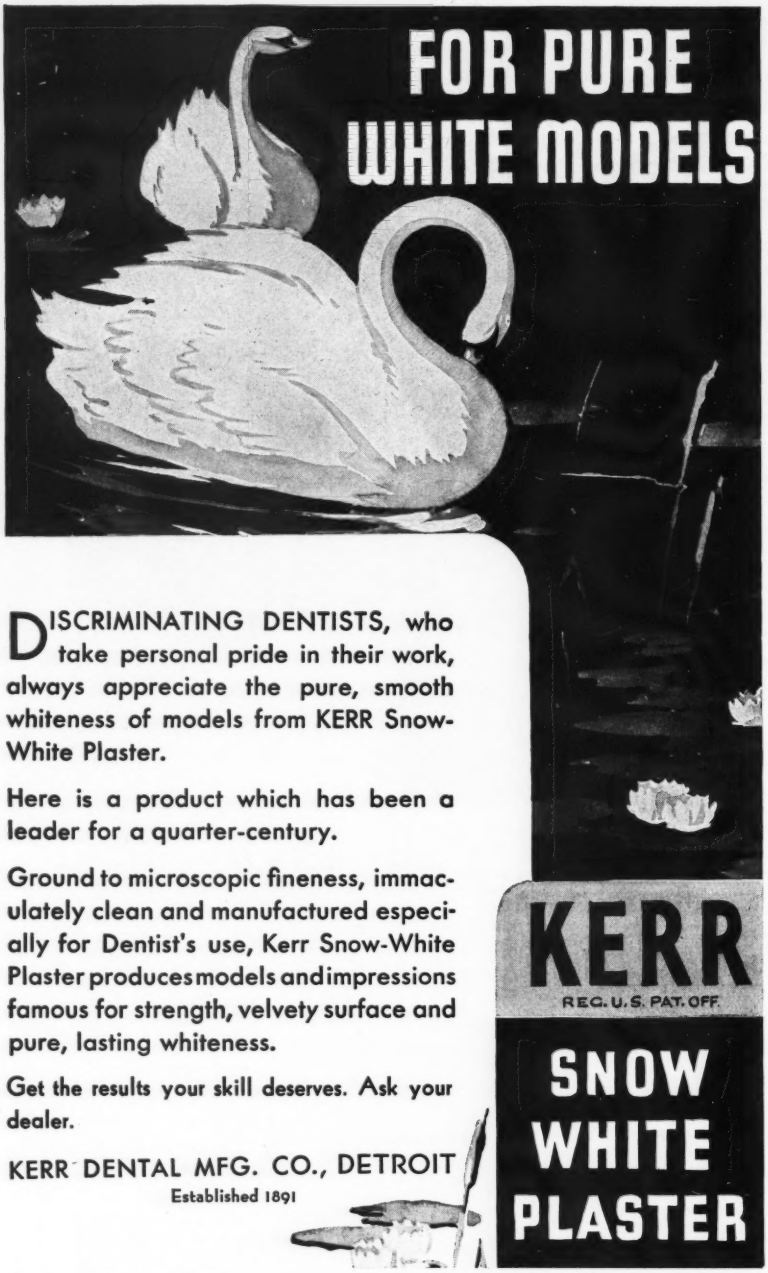
THE OXYGEN-LIBERATING ANTISEPTIC

VINCE LABORATORIES, INC. • 121 West 18th Street, New York City



DISCRIMINATING DENTISTS, who take personal pride in their work, always appreciate the pure, smooth whiteness of models from KERR Snow-White Plaster.

Here is a product which has been a leader for a quarter-century.

Ground to microscopic fineness, immaculately clean and manufactured especially for Dentist's use, Kerr Snow-White Plaster produces models and impressions famous for strength, velvety surface and pure, lasting whiteness.

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SNOW WHITE PLASTER

AMMONIACAL SILVER NITRATE AND FORMALIN
(HOWE)

Now that the advantages of Ammoniacal Silver Nitrate for covering the **entire field of tooth infection** have become so well known whenever you want information for sterilization of cavities, treatment of exposed pulps, pyorrhetic teeth, pulpless teeth and hypersensitive dentine

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whether you want information on the **materials and equipment** which are used to the best advantage, write to:

P. N. CONDIT • Box 204, Back Bay • Boston, Mass.

(*Please use coupon on page* 333)

they make spectacular injections while viewing themselves in the mirror; and the fixed bridges and dentures they make for themselves are legion in number. To be sure, it is better that dentists treat themselves than go untreated. Anyone who has viewed dentists in the raw and in the mass knows that as a class they are extreme examples of dental neglect, and their families, God help them, are often shameful examples of the shoemaker's children. Far better for dentists to perform these feats of dental legerdemain on themselves than to appear in public with edentulous spaces, clinical caries of the anterior teeth and the general pictures of a dental moratorium.

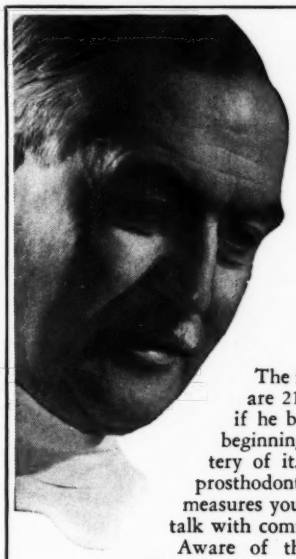
The country is worn out with too many weeks: Fire Prevention Week; Save the Dog Food Week; Don't Trample on the Violets Week; Sweep the Chimney Week. Dentists might, however, promote among the profession exclusively and by silent campaign a Dentistry for Dentists Week. Off-hand, I do not anticipate much activity or cooperation in such a project.

One gay fellow, boasting of his prowess at self-dental treatment told this story:

"In 1922, I made a cast crown for my lower left first molar, and *it's still there.* In 1928, I removed the pulp of a lower left second bicuspid, filled the root canal, and placed an amalgam. *and it's still there.* In 1931, I extracted the upper right first bicuspid, and *it's still out.*"

"Economy of Time" . . .

We would rather not think that war for us is imminent, but if it is, we may learn something from the experiences of people who have recently suffered and are currently suffering under this experience. What happens to the dental population in countries at war? How much of the dentist's time is taken in practice? What is the civilian population's attitude to dental care? What changes are necessary in the organization of dental practice? These are subjects that we may one day have to consider. To find tentative answers to these questions, we are reprinting an editorial from the *British Dental Journal* with the thought that it may (but we hope not) foreshadow the shape of things that are ahead of us:



DOCTOR, WHAT ARE YOU DOING ABOUT THE

"21 Crucial Days?"

The first three weeks while a denture is seating itself are 21 "crucial days" for your patient . . . because, if he becomes discouraged with his denture at the beginning, he may never persevere to eventual mastery of it. And they're crucial days for *you* as a prosthodontist . . . because your patient usually measures your work by how *quickly* he can eat and talk with comfort.

Aware of these important facts, over 50,000 dentists use and recommend DR. WERNET'S Powder to all new-denture cases. DR. WERNET'S Powder forms a thin, protective comfort-cushion that minimizes the irritation of tender gums . . . helps stabilize the denture until the patient has learned to manage it himself . . . promotes ease and assurance . . . speeds denture mastery!

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OVER 50,000 DENTISTS USE AND RECOMMEND

DR. WERNET'S POWDER

***COMPLETES* YOUR DENTURE SERVICE**

(Please use coupon on page 333)

'S.T. 37' Antiseptic Solution

A MODERN WEAPON AGAINST ORAL SEPSIS

THE ORAL SURGEON faces a unique problem; he must carry out surgical procedures, the success of which depends not only upon his skill, but also upon the absence of infection in one of the most highly infected cavities of the body—the mouth. In this he is aided by the defense mechanism and immunity of the patient's own tissues, but when these are traumatized, as occurs with even the most careful surgery, the tissue defense against infection is impaired. An antiseptic agent must be used, therefore, which not only kills bacteria, but which is not toxic to tissue and does not interfere with the natural defense mechanisms.

'S.T. 37' Antiseptic Solution is ideal for use in the oral cavity because of its high germicidal activity and the fact that its low surface tension facilitates its penetration into minute crevices and interstices. It is non-toxic and has been shown to possess the lowest tissue toxicity of all the commonly used organic antiseptics tested. It is germicidal in high dilution, is pleasant-tasting, odorless, colorless, and stainless.

'S.T. 37' Antiseptic Solution may be used as a spray either full strength or diluted with an equal part of water. For use as an irrigating solution it should be diluted with two or three parts of water. When used topically, it is applied full strength. As a wet dressing, a cotton pledget or gauze pad is saturated with the solution, full strength or diluted with one or two parts of water.

Because of its freedom from toxicity, 'S.T. 37' Antiseptic Solution is well suited for home use by the patient, and the dentist may safely recommend this germicide for use between office treatments.

'S.T. 37' Antiseptic Solution (formerly Hexylresorcinol 'Solution S.T. 37') is supplied in convenient five and twelve-ounce bottles.

Sharp & Dohme

HERE'S HOW TO GET

2 FREE

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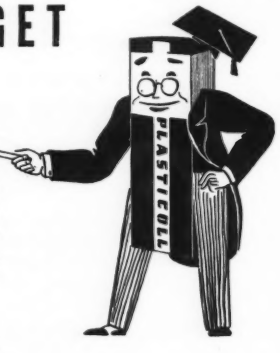

Just call your dealer and order the "14 for 12" Big Bakers Dozen Offer of this stronger, tougher, smoother hydrocolloidal impression material. You get a dozen sticks at the regular price of $5.00 *plus* 2 sticks absolutely free . . . or mail the handy coupon on page 333.

OFFER EXPIRES JULY 28, 1941

LEE S. SMITH & SON MFG. CO.
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"The calling up of the first large quota of dentists who have been selected by District Dental War Committees for service with the forces is now proceeding and the profession is beginning to feel the strain which full mobilisation entails. Up to the present it has generally been possible to replace the men who had gone into the forces by others whose practices had been disorganised by evacuation or bombing, but it is becoming increasingly difficult to fill vacancies either in the public service or in private practice and those members of the profession whose duty it is to provide for the essential needs of the civilian population for dental treatment are already finding that they have to shoulder a heavier burden of work. It is inevitable that this should be so since the giving of essential treatment to members of the forces entails much more than a redistribution of the work already being undertaken by the profession as a whole. It constitutes, in fact, a very considerable addition to the services rendered by it to the community since the men who have been called up for military service would not, as civilians, have made demands for the treatment which is necessary to render them fit to carry out their military duties.

"In this respect, the problem confronting the dental profession is similar to that with which all the industries of the country are faced, and as military necessities must take first place, the ultimate solution can only be found along the line of limitation of civilian consumption of professional time. It is, of course, true that the partial disorganisation of dental practice due to evacuation and enemy action has already brought about a diminution in the civilian demand for dental service in some parts of the country, but this has been offset, to some extent, by greatly increased demand in the reception areas, so that looked at as a whole the movements of the population have not greatly reduced the calls on the profession, and if it had not been for the hidden reserves of unoccupied surgery hours, the strain would have been felt at a much earlier stage than the present. These reserves have now been practically used up and the further calls which will be made by the services for dental officers can only be met by individual practitioners working harder

REPUTATIONS ARE MADE

when dentures are discussed in business offices

Outstanding Advantages

- *It has ample strength (toughness without brittleness).*
- *It is permanently lifelike in color.*
- *It is stable in form.*
- *It does not develop internal strains.*
- *It has a hard surface, easily cleaned.*
- *It is readily repaired.*
- *It is ideal for both partial and full dentures.*
- *It reproduces accurately.*
- *It does not irritate oral tissues.*

DU PONT

Lucitone

TRADE MARK

METHYL METHACRYLATE RESIN DENTURE MATERIAL

Denture work done in the dentist's office is only part of the picture. It's the conversations that take place afterwards—when patients talk about their dentures—that determine dental reputations.

If favorable comments could only be *assured!*

They can! Specify *Lucitone*—the one and only denture material recommended and guaranteed by both Du Pont and Caulk.

Because *Lucitone* is so precisely made and thoroughly tested, its satisfactory behavior in the mouth is assured. *Lucitone* means lasting peace-of-mind for every denture patient.

FOR MODERN MATERIALS CALL ON *Caulk*

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than in normal times and taking measures to restrict the amount of time devoted to individual patients. The nation is being taught, both by precept and through the agency of taxation, the vital need for economy and it is also slowly learning that the real value of restricting expenditure lies not in the saving of money, but in the consequent lessening of the demand for labour and services for civilian purposes, in order that these may be applied to the production of armaments and the maintenance of our armed forces at the highest possible pitch of efficiency.

"There is still, however, a considerable risk that some patients, prompted by a laudable desire to restrict spending, will postpone essential treatment and ultimately require to have more time spent on them than would have been necessary if they sought treatment earlier. On the other hand, there are sure to be a number who will expect to receive the same measure of attention as they have been accustomed to receive in the piping times of peace. These, however, are not likely to be so numerous as they were in the last war, for the older generation has had some experience of what war means and will be more ready to adapt themselves to wartime needs than their predecessors were twenty-five years ago. It should, therefore, be possible for individual practitioners to take measures to ration their time in such a way as to obviate, the dental equivalent of the queue, an overfull appointment book.

"The private practitioner, unlike his colleague in the forces, cannot afford to take the short view except with the concurrence of his patients, but there are many ways in which he can save time without detriment to his patients or to his own reputation. Conditions vary from practice to practice, and it would be difficult to give advice which would be applicable to all, but there are some general considerations which apply to most cases. The postponement, until after the war, of all non-essential work hardly needs to be mentioned. To carry on with an old, but still serviceable denture, which would ordinarily be replaced, should be regarded as great an act of patriotism as to wear an old suit. Another obvious saving is to postpone the more time-consuming restorations, such as porcelain and gold inlays, and to use silicate cements instead. These are but examples which every dentist will be able to multiply for himself. The amount of time saved on each operation may be small, but the total of all the possible savings will be considerable and so long as the essentials, such as thorough cavity preparation, are not sacrificed the patients' interests will be fully protected. Another category worthy of consideration is the general management of the practice and, in particular, of that important adjunct, the appointment book. As this gets more and more congested and the queue grows longer, the harassed dentist may have to choose between making appointments too far ahead for reasonable flexibility of work, or of making them too short to permit of the completion of a definite piece of work at each sitting. The latter is a fatally easy step to take, but in the long run, it makes matters worse instead of better, since it leads inevitably to waste of time in inserting and removing dressings. As a temporary measure to get over an immediate difficulty it may be justified, but it should form no part of any long-term policy designed to make the most of the strictly limited time available. It must also be borne in mind that

DATA:

The distance between the ends of the two yellow bars measures the "reserve toughness" or safety margin of a typical high strength dental gold, as between the limit of elastic conditions and breakage. As shown, unexpected shock could produce an effect approximately twenty times greater than normally encountered before breakage of the structure would occur.

GOLD'S RESER

Illustrating an importan

WHAT IS PERCENTAGE OF ELONGATION?

Percentage of elongation is a measure of the ability of a material to deform and to stretch before breaking.

GOLD

the time spent by patients in keeping appointments is not limited to the time they spend in the surgery. Many of them are, nowadays, as hard pressed for time as the dentist himself, and there can be but few patients whose services are not either directly or indirectly necessary to the nation's effort.

"The giving of necessary dental treatment is essential to the war effort, and every dentist, whether he be in the forces, the school dental service, or in private practice, owes a duty to the country to secure that, so far as in him lies, the efforts of the profession will be limited only by its numbers." (*The British Dental Journal* 70:190 (March) 1941.)

Army News . . .

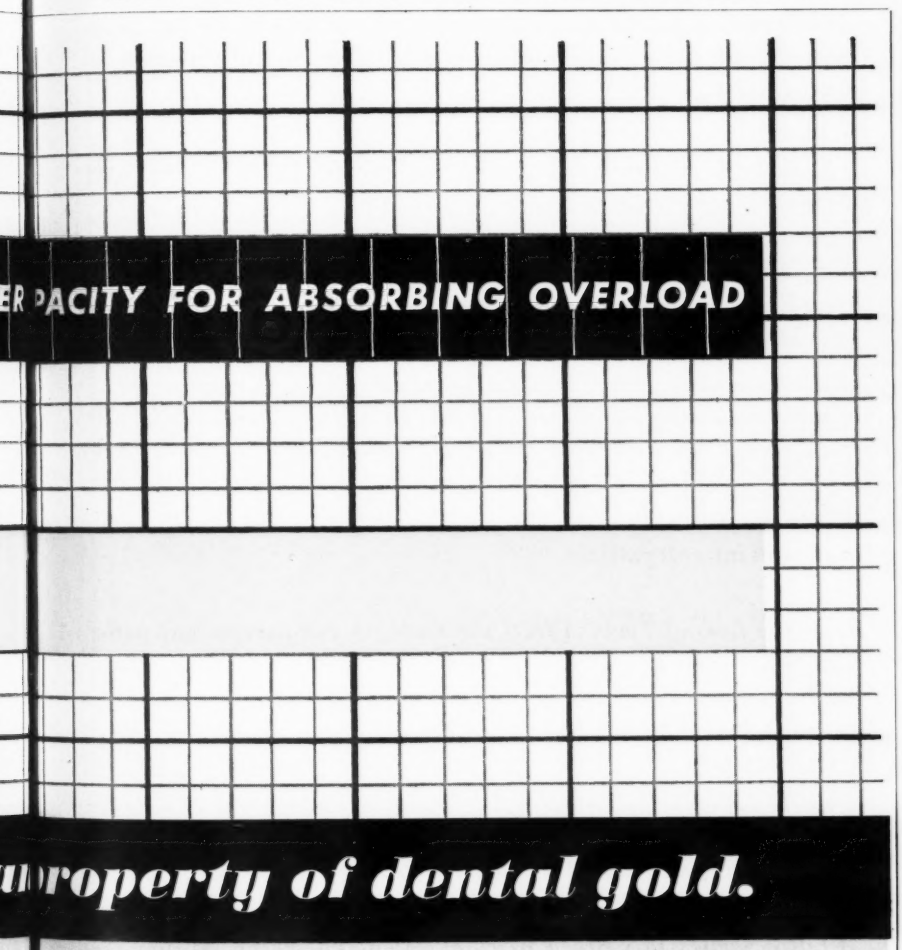
The Surgeon General's Office of the United States Army has recently released a strong statement which should put at rest fears among dentists that dental services in the Army are sometimes performed by enlisted men who are not graduate dentists. The War Department instructs that enlisted men, even inducted dentists, are not authorized to render dental services. Enlisted men, even if trained as dental mechanics, must never do any operating in the mouth even to the extent of placing a denture in position. The function of enlisted men in the Dental Corps is to act as assistants to dentists who hold an officer's rank. The soldiers being trained at replacement centers are being prepared to give first aid and emergency treatment for accidents and actual battle casualties. They are not being prepared to take over the functions of medical and dental officers.

In cases in which any violation of the order exists, wherein enlisted men, or any person not a graduate dentist, is known to be performing dental operations upon soldiers, it would be a great favor to the Surgeon General's Office if complete information were filed with the War Department.

Leg Selling . . .

In the jargon of the newspaper field a leg man is not necessarily a chap with bulgy thighs and sinuous calves but rather the flunky who chases all over town digging up news. The salescraft field has adopted this term to apply to the peripatetic salesman. There is also a feminine connotation to this leg-selling business. Advertising people have siezed the idea that if you have a good-looking girl with a fine pair of legs stuck into the picture, whether you are selling ice-boxes, airplanes, dental supplies, that is all you need: a pair of knees and a trim set of legs, they think, will do more than a description of the product, the picture of the product, or even the price—or the product itself. I have just come across a piece of copy wherein three fawning, grinning legful gals are staring out from a picture enticingly. In the background is the product that they are supposed to be whetting your appetite for, but rather than act as a sales appeal, these women deflect my attention from what I am supposed to buy.

My dissenting advice to advertisers, and I know nothing about their business or their craft, is in the form of reader-reaction: If you want to keep prospective buyers from wandering far afield on off-trail or off-color ideas, keep women with legs out of the picture.—E. J. R.



Why Is Gold's Percentage of Elongation Important in Dentistry? **It is an index of the extent to which the structure may be safely contoured and burnished. It is also important because a structure or part of a structure may be occasionally subjected to impact or other overloads, the forces of which cannot be accurately predicted. It is desirable that such overloads should not cause breakage even though they may cause permanent deformation. Dental golds provide a specially wide margin of safety in "reserve toughness" to cushion such occasional shocks or impacts. Further, should a gold structure be distorted, the case may then be annealed and readily restored to its original shape, after which it may be rehardened for severe service.**

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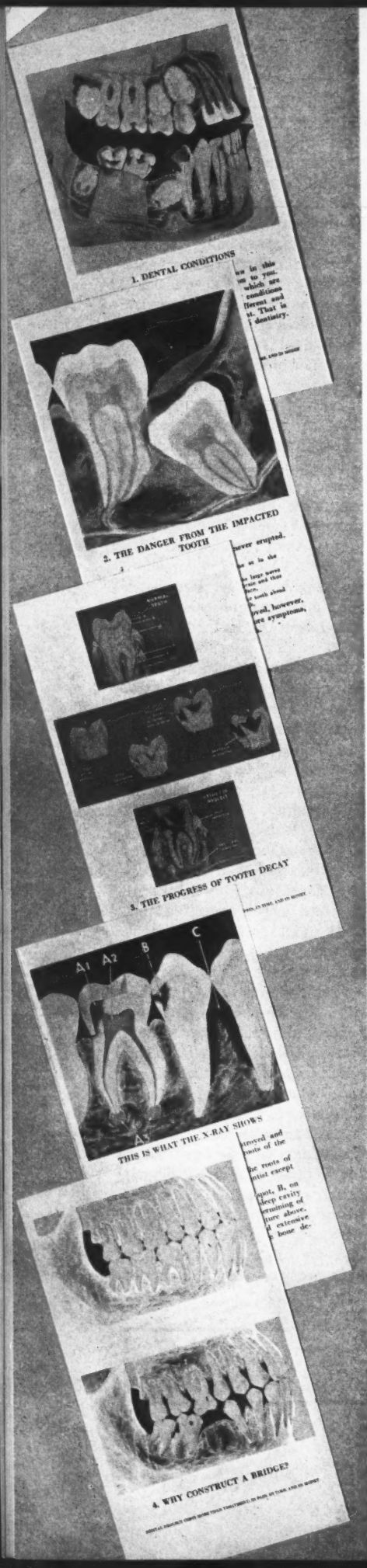
FORTY EAST FIFTY-FIRST STREET, NEW YORK CITY

100,000 COPIES SOLD

. . . See pages 330-331.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2. THE DANGER FROM THE IMPACTED TOOTH
3. THE PROGRESS OF TOOTH DECAY
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THIS IS WHAT THE X-RAY SHOWS
4. WHY CONSTRUCT A BRIDGE?

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9. *A Little Neglect May Breed Mischief*—Dental neglect costs more than treatment: in pain, in time, and in money.

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